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WASHINGTON D.C., 20460

OFFICE OF
CHEMICAL SAFETY AND
POLLUTION PREVENTION

MEMORANDUM

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SUBJECT: Environmental Fate and Ecological Risk Assessment for the Section 3 New Uses of Isoxaben on Bearing Nut Trees and Vineyards

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I. Executive Summary

Dow AgroSciences is seeking registration for a new use of the active ingredient isoxaben (PC Code 125851) as the sole active ingredient in the herbicidal end use product FN-3133 (Reg. No. 62719-LIN). Registration is being requested nationally for pre-emergent control of broadleaf weeds in bearing nut trees (e.g., almonds, beech nut, Brazil nut, butternut, cashew, chinquaman, filbert, hickory nut, macadamia nut, pecan, pistachio, and walnuts) and grapes. There are currently twelve Section 3 registrations based on isoxaben as the active ingredient (ai). There are no current food-use registrations. The proposed method of application evaluated for this assessment is ground spray but the label is not explicit. The proposed maximum single

application rate is 1.0 lb ai/A. FN-3133 may not be applied more than twice per crop year up to a maximum total of 1.0 lb ai/A per crop year. No reapplication interval is specified on the label.

Conclusions – Exposure Characterization

Isoxaben is moderately persistent and mobile ($K_d = 0.81$ to 6.63 mL/g). The mobility of isoxaben may decrease with increasing soil clay content and cation exchange capacity (CEC), although not significantly enough to consider isoxaben bound to soil or sediments. The compound may represent a ground water concern when applied to certain soils and/or where high water tables (shallow ground waters) are present (*i.e.* less than one foot below grade) and high rainfall/ irrigation occurs.

Isoxaben does not hydrolyze and does not appear to readily degrade in terrestrial environments. Primary routes of degradation appear to be biodegradation in aerobic and anaerobic water bodies and photolysis in shallow, clear water bodies.

Four major degradates detected in laboratory biometabolism studies include: hydroxyisoxaben; dimethoxybenzamide; methoxyphenylpyrimidinol and AEM hexenoylisoxaben. Four minor degradates identified include: hydroxymethoxybenzamide; oxypropyl isoxaben; desmethyl isoxaben and methoxyphenyl pyrimidinol. One available mobility study and an EPISuite analysis indicate that several of these isoxaben degradates are more mobile than the parent. The four major degradates identified above are included in aquatic estimated environmental concentrations using a total toxic residues approach.

Conclusions – Effects Characterization

Consistent with isoxaben's intended use as a herbicide, the compound is toxic to aquatic and terrestrial plants. Isoxaben is practically nontoxic to aquatic and terrestrial animal species on an acute exposure basis. Sublethal effects (abnormal larvae) were noted in an acute estuarine/marine invertebrate study with clams, but no data are available on the chronic effect of isoxaben on estuarine/marine species. No effects from chronic exposure were observed in studies with freshwater species. Chronic effects on the growth and reproduction of birds and mammals were reported in the available toxicity studies.

The four major degradates identified in the exposure characterization are considered to be as toxic as the parent compound based on their structural similarity and are included in estimates of total toxic residues.

Potential Risks to Non-target Organisms

Isoxaben is moderately persistent and combined with its potential chronic effects, the proposed use of the compound the proposed use of isoxaben on grapes and bearing nut trees has the potential to adversely affect the growth of birds, terrestrial-phase amphibians, reptiles and mammals from chronic exposure. Depending on soil conditions and weather, isoxaben can move to surface water via spray drift, direct runoff or through runoff of sediment-bound residues.

Estimated concentrations in water are considered likely to adversely affect aquatic plant growth and this could significantly impair primary productivity. Impaired primary productivity could in turn lead to decreased water quality and reduced forage for aquatic biota and result in secondary effects across a broad range of aquatic animals. Acute and chronic risk estimates for direct effects on aquatic animals are below levels of concern; however, there is uncertainty regarding the extent to which secondary effects from decreased primary productivity will impact the aquatic community.

Additionally, growth of nontarget aquatic and terrestrial plants is expected to be adversely affected. Because there is differential toxicity across the species of plants in the available studies, it is possible that this could lead to shifts in nontarget plant communities exposed to isoxaben. Changes in plant communities, which provide habitat, food and are primary producers in ecosystems, can lead to indirect effects to terrestrial organisms.

Potential effects to federally-listed endangered and threatened species (listed species) based on exceedances of Agency Levels of Concern (LOCs) require an in-depth listed species evaluation to determine the extent of potential co-occurrence of listed species and the areas in which use is proposed on grapes and bearing nut trees. Identified potential risks to listed species are summarized in **Table 1**. Listed terrestrial plants may be directly affected by isoxaben use, and indirect effects on other listed species are possible.

Table 1. Potential Listed Species Risks Associated with Direct or Indirect Effects Due to the Proposed Application of Isoxaben on Bearing Nut trees and Grapes.

Listed Taxon	Direct Effects	Indirect Effects
Terrestrial and semi-aquatic plants - monocots	Yes	Yes ¹
Terrestrial and semi-aquatic plants - dicots	Yes	Yes ¹
Birds	Yes	Yes ¹
Terrestrial-phase amphibians	Yes	Yes ¹
Terrestrial invertebrates	Yes	Yes ¹
Reptiles	Yes	Yes ¹
Mammals	Yes	Yes ¹
Aquatic vascular plants	Yes	Yes ¹
Aquatic nonvascular plants	Yes	Yes ¹
Freshwater fish	No	Yes ¹

Aquatic-phase amphibians	No	Yes ¹
Freshwater invertebrates	No	Yes ¹
Mollusks	No	Yes ¹
Marine/estuarine fish	No	Yes ¹
Marine/estuarine crustaceans	Yes	Yes ¹

¹Nonlisted LOC exceeded for terrestrial plants, therefore there is potential for adverse effects to those species that rely either on a specific plant species or multiple plant species. Plant indirect effects may include general habitat modification, host plant loss, and food supply disruption.

II. Problem Formulation

A. Nature of the Regulatory Action

Dow AgroSciences is seeking registration for a new use of the active ingredient isoxaben (PC Code 125851) as the sole active ingredient in the herbicidal end use product FN-3133 (Reg. No. 62719-LIN). Registration is being requested nationally for pre-emergent control of broadleaf weeds in bearing nut trees and grapes. There are currently twelve Section 3 registrations based on isoxaben as the active ingredient (ai). There are no current food-use registrations. The proposed method of application evaluated for this assessment is ground spray but the label is not explicit. The proposed maximum single application rate is 1.0 lb ai/A. FN-3133 may not be applied more than twice per crop year up to a maximum total of 1.0 lb ai/A per crop year. No reapplication interval is specified on the label.

B. Previous Assessments

Isoxaben was registered for use as a pre-emergent herbicide in 1989. There are currently twelve Section 3 registrations based on isoxaben as the active ingredient (ai), including use on rights-of-ways, turf, landscaping, nurseries, other industrial (noncrop) areas and non-bearing fruit and nut crops. There are no current food-use registrations. The reregistration review docket for isoxaben was opened in 2008¹. No ecological risk assessments have been conducted previously for isoxaben.

C. Stressor Source and Distribution

1. Nature of the Chemical Stressor

Isoxaben is a pre-emergent benzamide herbicide used for the control of broadleaf (dicotyledonous) weeds. The specific mode of action for isoxaben is not well understood, but isoxaben has been shown to inhibit the conversion of glucose to cellulose in cell wall synthesis in

¹ <http://www.regulations.gov/search/Regs/home.html#docketDetail?R=EPA-HQ-OPP-2007-1038>

sensitive species, with grasses (Family: Poaceae) tending to be more tolerant than other plant groups (Salihue *et al.* 1998). Isoxaben is not thought to be highly mobile in adult plant tissues, apparently limiting its toxicity to older plants, but allowing increased efficacy in emerging seedlings. Nonetheless, the vegetative vigor of early growth plants, particularly ryegrass, is affected by isoxaben, as discussed in the Ecological Effects Characterization. Chemical properties of isoxaben are presented in **Table 2**, while the structure of isoxaben is depicted in **Figure 1**.

Table 2. Nature of the Chemical Stressor

Common name	Isoxaben (EL-107)
Chemical Name	N- [3-(methylpent-3-yl)isoxazol-5-yl]-2,6-dimethoxy-benzamide
Pesticide type, such as herbicide or insecticide,	Herbicide
Chemical class	benzamide
CAS number	82558-50-7
Empirical formula	C ₁₈ H ₂₄ N ₂ O ₄
Molecular Mass (g/mol)	332.39 g · mol ⁻¹
Vapor pressure (torr)	≤3.9 X 10 ⁻⁷
Henry's Law Constant at 20°C (atm·m ³ /mole)	8.5x10 ⁻¹⁰
Solubility in water (ppm)	1
Log K _{ow}	2.64
pK _a at 25°C	9.78

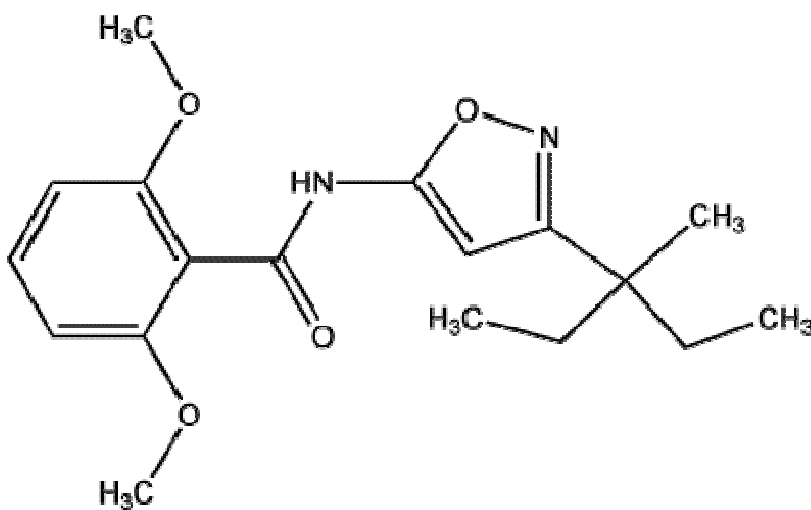


Figure 1. Chemical structure of isoxaben.

Isoxaben is moderately persistent and ($K_d = 0.81$ to 6.63 mL/g) mobile (MRID 41106303). There is some indication that the mobility of isoxaben decreases with increasing soil clay content and cation exchange capacity (CEC) (MRID 41106303), although not significantly enough to consider isoxaben bound to soil or sediments. The compound may represent a ground

water concern when applied to certain soils and/or where high water tables (shallow groundwater) are present (*i.e.* less than one foot below grade) and high rainfall/ irrigation occurs (MRID 40059508).

Isoxaben does not hydrolyze and does not appear to readily degrade in terrestrial environments (MRIDs 41106302, 143786, and 164646). Primary routes of degradation appear to be biodegradation in aerobic and anaerobic water bodies and photolysis in shallow, clear water bodies (MRIDs 40059507, 46393201 and 46393202).

Major degradates detected during aerobic and anaerobic soil metabolism studies and aerobic and anaerobic aqueous metabolism studies include: hydroxyisoxaben; dimethoxybenzamide; methoxyphenylpyrimidinol and amino ethyl methyl (AEM) hexenoylisoxaben. A mobility study (MRID 41106303) and EPISuite² analysis indicate that several of these isoxaben degradates are more mobile than the parent. Additionally, four major photolytic degradates (Unk 3, Unk 3i, Unk 5a, and Unk 5b) were detected but not conclusively identified (MRID 47140003). The Health Effects Division (HED) evaluated the isoxaben residues of concern for human health. Because the formation of the photodegradates was considered minimal (e.g., formed only during aqueous photolysis) and a structural activity relationship (SAR) analysis performed by HED concluded that none of these degradates were expected to be more toxic than the parent compound, these photodegradates were not of exposure concern and were excluded as residues of concern. HED concluded that the major degradates detected during the aerobic and anaerobic soil and aqueous metabolism studies were not expected to be more toxic to humans than the parent compound, but data were not available to exclude them as residues of concern. As such, the degradates hydroxyisoxaben, dimethoxybenzamide, methoxyphenylpyrimidinol, and AEM hexenoylisoxaben were included as residues of concern for human health (USEPA, 2010). For this assessment, in the absence of ecotoxicity data, these degradates were also included as residues of concern for aquatic organisms using a total toxic residue (TTR) analysis.

2. Overview of Pesticide Usage

Isoxaben was registered in 1989 for various uses, including: rights-of-ways, turf, landscaping, nurseries, other industrial (noncrop) areas and non-bearing fruit and nut crops. The majority of uses have an application rate of 1.0 lb ai/A/application, three applications per year with a 60-day reapplication interval, applied either as a dry flowable product in a broadcast spray or as a granular product in a spreader. Some uses are only 0.5 lbs ai/A/application and there are hand-applied soil treatments at rates up to 2.0 lbs ai/A/application.

Based on label instructions for the 12 registered isoxaben product labels, most prohibit aerial application; however, it is not clear whether all of the current uses prohibit aerial application (*e.g.* usage on conifer seed orchards). There are label prohibitions on chemigation and direct applications to water. Warnings regarding the potential toxicity to aquatic organisms and avoidance of spray drift are on the labels as well. Isoxaben is not for sale, distribution or use in New York State.

² http://cfpub.epa.gov/crem/knowledge_base/crem_report.cfm?deid=74897

In a memo from the OPP Biological and Economic Analysis Division (BEAD) dated 08/01/2007, national non-crop usage accounted for nearly 19,000 (94%) of the 20,372 lbs applied annually (on average) for the years 2003-2005, with rights-of-way alone accounting for an annual average of 11,619 lbs (57% of total applied).

Isoxaben is currently limited to non-bearing food crops (*i.e.* food crops not yet producing a marketable harvest); therefore, historically, only a small percentage of total target crop area planted is expected to be treated. For instance, according to the Screening Level Usage Analysis (SLUA, 2007) for isoxaben, the maximum area treated for almonds, apples grapes and walnuts is less than 2.5% of total area planted for each crop. Registered non-bearing crop uses include almond, apple, apricot, avocado, banana, blackberry (and other raspberry crops), blueberry, cherry, citrus fruits, elderberry, fig, grapes, nut trees, olive and pomegranate. Approval of the new food use on bearing tree nuts and grapes would likely increase the amount of isoxaben used on these crops and as such increase the percent crop treated.

D. Receptors

1. Aquatic Effects and Terrestrial Effects

The receptor is the biological entity that is exposed to the stressor (USEPA, 1998). Aquatic and terrestrial receptors that may be exposed to isoxaben include any organism within the action area.

Consistent with the process described in the Overview Document (USEPA, 2004), this risk assessment uses a surrogate species approach in its evaluation of isoxaben toxicity. Toxicological data generated from surrogate test species, which are intended to be representative of broad taxonomic groups, are used to extrapolate to potential effects on a variety of species (receptors) included under these taxonomic groupings.

Acute and chronic toxicity data from studies submitted by pesticide registrants along with the available open literature are used to evaluate the potential direct effects of isoxaben to the aquatic and terrestrial receptors identified in this section. This includes toxicity data on the technical grade active ingredient, formulated products and, when available, degradates. Open literature studies are identified through EPA's publically available ECOTOX database (<http://cfpub.epa.gov/ecotox/>), which employs a literature search engine for locating chemical toxicity data for aquatic and terrestrial wildlife and plants. The evaluation of both sources of data may also provide insight into the direct and indirect effects of isoxaben on biotic communities from loss of species that are sensitive to the chemical and from changes in structure and functional characteristics of the affected communities.

Isoxaben's effect on aquatic organisms is estimated from acute and chronic laboratory studies submitted to the Agency by the technical registrant. The registrant has submitted acute and chronic studies on aquatic vertebrates and invertebrates and studies on the effects of exposure on aquatic plants. Freshwater fish, *e.g.*, bluegill sunfish (*Lepomis macrochirus*) and rainbow trout (*Oncorhynchus mykiss*), are used as surrogates for all freshwater fish species.

Freshwater fish are usually used as surrogates for aquatic-phase amphibians unless amphibian-specific data are available; amphibian data are unavailable for isoxaben. Freshwater invertebrate effects are estimated from studies using the waterflea (*Daphnia magna*). Effects of isoxaben on all estuarine/marine fish are estimated from effects on sheepshead minnow (*Cyprinodon variegatus*), while estuarine/marine invertebrate effects are estimated from studies on Quahog clam (*Mercenaria mercenaria*) and grass shrimp (*Palaemonetes pugio*). Effects on aquatic vascular plants are estimated from studies on duckweed (*Lemna gibba*), while effects on aquatic non-vascular plants are similarly estimated from studies on surrogate species of microalgae.

The effect of isoxaben on all bird species is estimated from acute oral, subacute dietary and chronic dietary studies on two species, bobwhite quail (*Colinus virginianus*) and mallard duck (*Anas platyrhynchos*). Recent changes in the study guidelines require an acute passerine study, which is not available for this assessment. Birds serve as surrogates for reptiles and terrestrial-phase amphibians. Effects on mammals are estimated from acute and chronic rat studies submitted to and reviewed by the Health Effects Division (HED). Potential effects on beneficial insects are estimated using the honey bee (*Apis mellifera*) as a surrogate.

Ten species of terrestrial crop plants are studied to estimate the effect of isoxaben on all terrestrial plant species.

Table 3 provides a summary of the taxonomic groups and the surrogate species tested to evaluate potential ecological effects of isoxaben to these non-target taxonomic groups.

Table 3. Test Species Evaluated for Assessing Potential Ecological Effects of Isoxaben

Taxonomic Group	Surrogate Species	Acute Toxicity Classification
Birds ¹	Mallard (<i>Anas platyrhynchos</i>) Bobwhite (<i>Colinus virginianus</i>)	Practically non-toxic
Mammals	Laboratory rat (<i>Rattus rattus</i>)	Practically non-toxic
Insects	Honey bee (<i>Apis mellifera</i> L.)	Practically non-toxic
Freshwater fish	Bluegill sunfish (<i>Lepomis macrochirus</i>) Rainbow trout (<i>Oncorhynchus mykiss</i>)	Moderately toxic Moderately toxic
Freshwater invertebrates	Water flea (<i>Daphnia magna</i>)	Moderately toxic
Estuarine/marine fish	Sheepshead minnow (<i>Cyprinodon variegatus</i>)	Moderately toxic
Estuarine/marine invertebrates	Grass shrimp (<i>Palaemonetes pugio</i>) Quahog clam (<i>Mercenaria mercenaria</i>)	Moderately toxic
Terrestrial plants	Monocots – onion (<i>Allium cepa</i>) Dicots – soybean (<i>Glycine max</i>)	Not classified
Aquatic plants and algae	Duckweed (<i>Lemna gibba</i>) Green algae (<i>Pseudokirchneriella subcapitata</i>)	Not classified

2. Ecosystems at Risk

The ecosystems at risk are often extensive in scope, and as a result it may not be possible to identify specific ecosystems during the development of a baseline risk assessment. However, in general terms, terrestrial ecosystems potentially at risk could include the treated vineyard or orchard and areas immediately adjacent to the treated field that may receive drift or runoff.

Areas adjacent to the treated field could include cultivated fields, fencerows and hedgerows, meadows, fallow fields or grasslands, woodlands, wetlands, riparian habitats, and other uncultivated areas.

Aquatic ecosystems potentially at risk include water bodies adjacent to, or down stream from, the treated vineyard or orchard and might include impounded bodies such as ponds, lakes and reservoirs, or flowing waterways such as streams or rivers. For uses in coastal areas, aquatic habitat also includes marine ecosystems, including estuaries.

E. Assessment Endpoints

Assessment endpoints are intended to be representative estimates of biological entities to be protected, and their attributes that might be affected by exposure to the pesticide stressor. The valued entities are terrestrial and aquatic vertebrates and invertebrates, aquatic vascular and nonvascular plants, and terrestrial plants. The attributes used to gauge the effects of isoxaben on the valued entities are mortality (or phytotoxicity) from acute exposure and reproductive, growth (length and weight) and survival effects from chronic exposure.

Guideline toxicity tests are intended to determine pesticidal effects on ecological entities that include birds, mammals, fish, terrestrial and aquatic invertebrates and plants. The most sensitive toxicity endpoints are used from surrogate test species (receptors) to estimate treatment-related direct effects on acute and chronic reproductive, growth and survival assessment endpoints. The studies are used to evaluate the potential of a pesticide to cause adverse effects, to determine whether further testing is required, and to determine the need for precautionary label statements to minimize the potential adverse effects to non-target animals and plants.

F. Conceptual Model

For a pesticide to pose an ecological risk, it must reach ecological receptors in biologically significant concentrations. An exposure pathway is the means by which a pesticide moves in the environment from a source to an ecological receptor. For an ecological pathway to be complete, it must have a source, a release mechanism, an environmental transport medium, a point of exposure for ecological receptors and a feasible route of exposure.

A conceptual model provides a written description and visual representation of the predicted relationships between isoxaben, potential routes of exposure, and the predicted effects for the assessment endpoint. The conceptual model consists of two major components: risk hypothesis and a conceptual diagram (USEPA, 1998).

This risk assessment does not take into account atmospheric transport in estimating environmental concentrations (note, very low vapor pressure indicates that vapor-phase transport will be negligible), nor does it account for ingestion of isoxaben residues by animals in drinking water or contaminated grit, ingestion through preening activities, or uptake through inhalation or dermal absorption by terrestrial animals. Exposure to terrestrial animals is based primarily on dietary consumption of residues while aquatic assessments assume that all potential routes of direct exposure are accounted for. Plant exposure is based on spray drift and runoff.

1. Risk Hypothesis

Isoxaben is proposed for use as an herbicide on bearing nut trees and grapes, which involves situations in the environment where potential routes of exposure can result in direct contact to forage items (e.g., grass), as well as indirect contamination of adjacent bodies of water. Since no previous ecological risk assessment has been conducted, the following generic ecological risk hypothesis is being employed for this risk assessment:

Given the uses of isoxaben and its environmental fate properties, there is a likelihood of exposure to non-target terrestrial and aquatic organisms. When used in accordance with the label, isoxaben can result in reduced survival, growth and/or reproductive success in both terrestrial and aquatic organisms, either directly or indirectly. As an herbicide, direct effects to plants are expected and subsequently indirect to effects to other organisms dependent on both terrestrial and aquatic plants may occur as a result of the proposed use of isoxaben on orchards and/or vineyards.

2. Diagrams

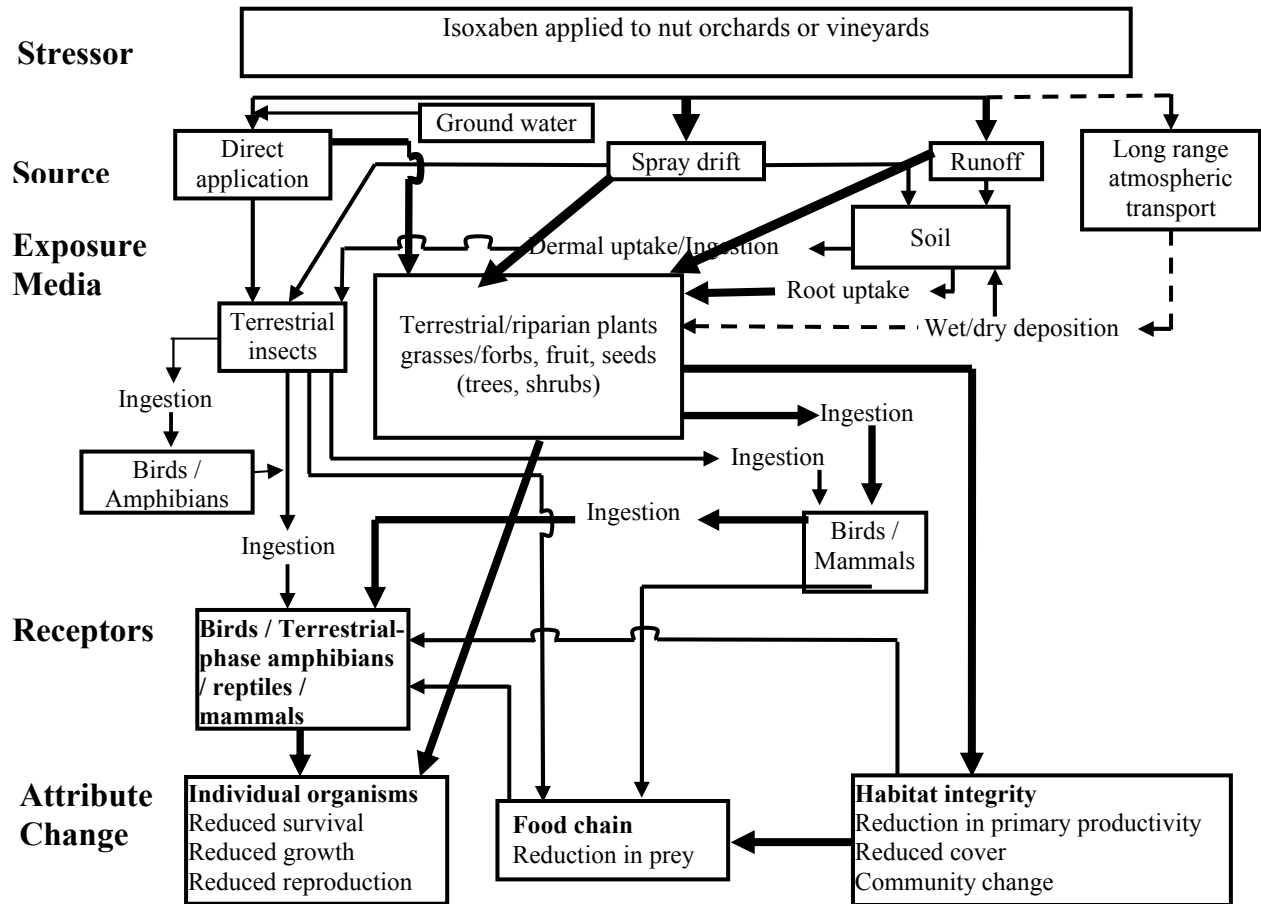


Figure 2. Conceptual model for isoxaben exposure to terrestrial organisms. BOLD lines indicate route of exposure considered of higher importance for isoxaben. Dotted lines represent low likelihood routes of exposure.

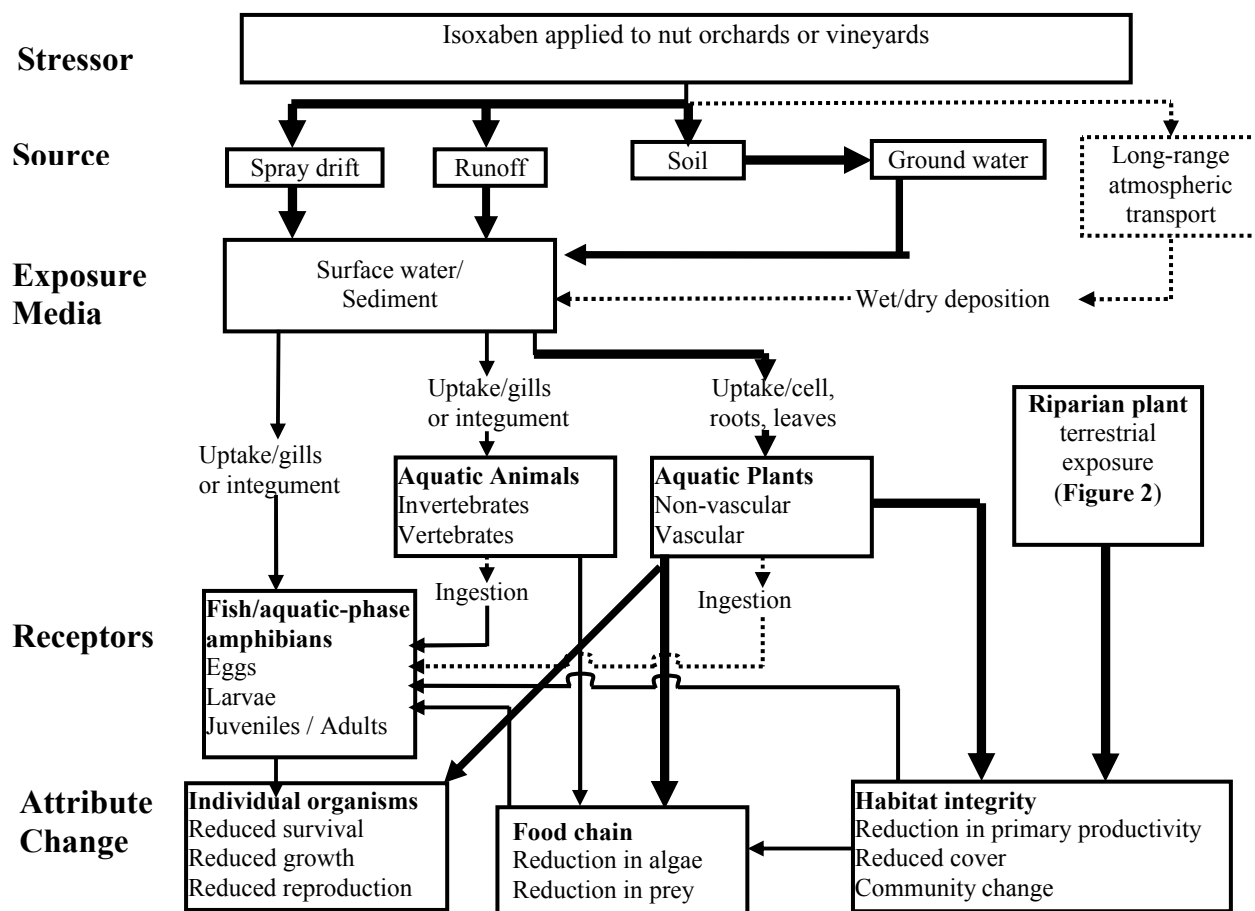


Figure 3. Conceptual model for isoxaben effects to aquatic organisms. BOLD lines indicate route of exposure considered of higher importance for isoxaben. Dotted lines represent low likelihood routes of exposure.

G. Analysis Plan

This document characterizes the environmental fate of isoxaben to assess the extent to which non-target organisms might be exposed through the proposed uses of this herbicide on bearing tree nut orchards and vineyards. The toxicity of isoxaben is also characterized, based primarily on registrant-submitted toxicity tests. Estimated exposure (based on total toxic residues) and effects are integrated to calculate risk quotients (RQs) for non-target endangered/threatened and non-endangered animals and plants. These RQs are compared to predetermined levels-of-concern (LOCs) to determine which taxa may be potentially affected.

Although risk, in the context intended here, is often defined as the likelihood and magnitude of adverse ecological effects, the risk quotient-based approach does not provide a quantitative estimate of likelihood and/or magnitude of an adverse effect. Such estimates may be possible through a more refined, probabilistic assessment. However, this is beyond the scope of this screening-level assessment.

1. Measures to Evaluate Risk Hypotheses and Conceptual Model

a. Measures of Exposure

Measures of exposure to aquatic animals and plants are concentrations in surface water based on aquatic and terrestrial models that predict estimated environmental concentrations (EEC) of isoxaben using maximum labeled application rates and application methods that have the greatest potential for off-site transport of the chemical. The models used to predict aquatic EECs are the Pesticide Root Zone Model coupled with the EXposure Analysis Model System (PRZM/EXAMS). The model used to predict terrestrial EECs on food items is T-REX. The model used to derive EECs relevant to terrestrial and wetland plants is TerrPlant.

PRZM and EXAMS are simulation models coupled with a graphical user interface to generate daily exposures and 1-in-10-year estimated EECs of isoxaben that may occur in surface water bodies adjacent to application sites receiving isoxaben through runoff and spray drift. PRZM simulates pesticide application, movement and transformation on an agricultural field and the resultant pesticide loadings to a receiving water body via runoff, erosion, and spray drift. EXAMS simulates the fate of the pesticide and resulting concentrations in the water body. The standard watershed geometry used for ecological pesticide assessments assumes application to a 10-hectare agricultural field that drains into an adjacent 1-hectare water body that is 2 meters deep (20,000 m³ volume) with no outlet. The linked PRZM/EXAMS models are used to estimate screening-level exposure of aquatic organisms to isoxaben. The measure of exposure for aquatic species is the 1-in-10-year return peak or rolling mean concentration. The 1-in-10-year peak is used for estimating acute exposures of direct effects to aquatic organisms. The 1-in-10-year 60-day mean is used for assessing chronic exposure to fish and aquatic-phase amphibians. The 1-in-10-year 21-day mean is used for assessing aquatic invertebrate chronic exposure.

Measures of exposure to terrestrial plants irrigated with ground water were simulated using EECs from the Screening Concentration In GROund Water model (SCI-GROW, v2.3, Jul. 29, 2003) that were postprocessed (procedure outlined in Appendix A). SCI-GROW was a regression model used as a screening tool to estimate pesticide concentrations found in ground water. SCI-GROW was developed by fitting a linear model to ground water concentrations with the Relative Index of Leaching Potential (RILP) as the independent variable. Ground water concentrations were taken from 90-day average high concentrations from Prospective Ground Water studies. The RILP is a function of aerobic soil metabolism and the soil-water partition coefficient. The output of SCI-GROW represents the concentrations of isoxaben residue that might be expected in shallow unconfined aquifers under sandy soils, which is representative of the ground water most vulnerable to pesticide contamination. Postprocessing assumes that ground water concentrations estimated by SCI-GROW are applied to a field via one inch of irrigation.

Exposure to terrestrial animals through consumption of treated feed items was calculated from the maximum proposed label rate using a nomogram derived from the work of Hoerger and Kenaga (1972) and Fletcher *et al.* (1994) using the spreadsheet model T-REX (version 1.4.1).

Measures of exposure to terrestrial plants were expressed as a fraction of the mass of isoxaben applied to a treated field. The screening model TerrPlant (version 1.2.2) assumes that default fractions of the intended application will be transported to an adjacent field through runoff and spray drift. To evaluate the spatial extent of risk to nontarget terrestrial plants, AgDRIFT® v2.01 was used to determine at what distance from the application area LOCs are no longer exceeded.

b. Measures of Effect

Measures of effect are obtained from a suite of OCSPP guideline studies conducted with a limited number of surrogate species. The test species are intended to be representative of the most sensitive species, but are typically selected based on their ability to thrive under laboratory conditions. Consistent with EPA test guidelines, the registrant has provided a suite of ecological effects data to the Agency. Acute measures of effect are typically the median lethal concentrations that produce 50% mortality in the test organisms (*e.g.* LC₅₀). Measures of chronic exposure typically result from reproduction studies for which a no-observed-adverse-effect-concentration (NOAEC) is determined. The measure of effect for terrestrial plants is the EC₂₅. Endangered plant effects endpoints are the lowest test rate where there is no observed effect on survival or growth.

III. Analysis

A. Exposure Characterization

1. Environmental Fate and Transport Characterization

The physical and chemical properties and the environmental fate source data from submitted studies for isoxaben and its major degradates are summarized in **Table 4**. Environmental fate and transport properties of isoxaben are characterized in further detail in the following sections.

Table 4. Physical/chemical properties and environmental fate source data for isoxaben and its degradates.			
Property	Value	Source	Comments
Chemical Name	N- [3-(methylpent-3-yl)isoxazol-5-yl]-2,6-dimethoxy-benzamide	-	
Molecular Weight (g/mol)	332.39	-	
Solubility in Water (mg/L @ 20°C)	1	MRID 40059506	
Vapor Pressure (torr @ 26°C)	<3.9x10 ⁻⁷	MRID 40059506	
Octanol-water partition coefficient (K_{ow})	434	MRID 40059506	
Hydrolysis Half-life (pH 5, 7, and 9; 25°C)	Stable	MRID 00250449	

Table 4. Physical/chemical properties and environmental fate source data for isoxaben and its degradates.			
Property	Value	Source	Comments
Aqueous Photolysis Half-life (days)	6	MRID 47140003	
Soil Photolysis Half-life (days)	49	MRID 47428403	
Aerobic Soil Metabolism Half-life (days)	161 (sandy loam) 210 (silt loam) 277 (silt loam) 866 (sand)	MRID 47140004	
Anaerobic Soil Metabolism Half-life (days)	224	MRID 41106302	
Aerobic Aquatic Metabolism Half-life (days)	21 (sand and sandy loam)	MRID 46393202	
Anaerobic Aquatic Metabolism Half-life (days)	18	MRID 46393201	
Soil-Water Partition Coefficients (mL/g) (K_d)	0.81 (sand) 2.48 (sandy loam) 4.41 (loam) 6.63 (clay loam) 2.18 (loamy sand)	MRID 41106303	
Henry's Law Constant (atm-m³/mol)	8.5×10^{-10}	—	Calculated from vapor pressure, molecular weight, and solubility.
Bioaccumulation	At 0.25 ppm: 14x for edible, 134x for non-edible, 70x for whole fish tissues 92-99% of ¹⁴ C residues eliminated by 14 days	MRID 40059509	
Terrestrial field dissipation half-life (soil texture) in top 6 inches of soil	34-55 days in spring treated sand soil (Florida) and loam soil (Indiana) 78-174 days in autumn treated sand soil (Florida) and sandy loam soil (Texas) 72 days in clay loam soil (Illinois) 122-134 days in silt loam soil (Indiana)	MRID 40059508 MRID 40059508 MRIDs 40532102 & 40532103 MRID 00250449 & 00153107	

Isoxaben is moderately persistent and mobile (K_d = 0.81 to 6.63 mL/g) (MRID 41106303). There is some indication that the mobility of isoxaben decreases with increasing soil clay content and cation exchange capacity (CEC) (MRID 41106303), although not significantly enough to consider isoxaben bound to soil or sediments. Isoxaben does not hydrolyze and does not appear to readily degrade in terrestrial environments (MRIDs 41106302, 143786, and 164646). Primary routes of degradation appear to be biodegradation in aerobic and anaerobic

water bodies and photolysis in shallow, clear water bodies (MRIDs 40059507, 46393201 and 46393202).

a. Transport and Mobility

Isoxaben is not volatile, with a vapor pressure of less than 3.9×10^{-7} torr at 26°C (MRID 40059506). The compound exhibits weak acid behavior ($pK_a = 9.8$), is neutral environmental pHs, and is moderately soluble in water at environmental pH=7 (1 mg/L; MRID 40059506). The reported K_{ow} for isoxaben was 434 (MRID 40059506).

Isoxaben is considered mobile, with reported soil-water partition coefficients (K_d) from five soils ranging from 0.81 to 6.63 (MRID 41106303). A regression analysis of the adsorption coefficients versus the organic carbon content yielded a $p\text{-value} > 0.1$; as such, the Koc model was deemed inappropriate and K_d values were used in the modeling.

A leaching and adsorption/desorption study was conducted on one of the identified major degradates: hydroxyisoxaben. With reported K_d from five soils ranging from 0.06 to 0.84, this compound was more mobile than the parent (MRID 41106303).

Compounds with K_d values less than five present a potential concern for ground water (USEPA, 2008a). Therefore, isoxaben and its major degrade hydroxyisoxaben, based on study data, present a potential ground water concern in some soils, especially those that are sandy and have low organic carbon content (all K_d values for both compounds, except for clay loam soil, were less than 5; MRID 41106303).

b. Degradation

Isoxaben is stable to hydrolysis at pH 5, 7 and 9 (MRID 00250449). It is rapidly photolyzed in shallow, clear water, with a corrected environmental half-life of 6 days at pH 7 (MRID 47140003). Major degradates include dimethoxybenzamide and four degradates that were detected but not conclusively identified; a uracil (Unk 3), an oxime (Unk 3i), a pyrazolone (Unk 5a), and an isoquinolone (Unk 5b). Study authors indicated that extensive efforts were made to identify the compounds, but in the end the best that could be done was to identify structural and functional group changes that occurred during photodegradation. The names and structures of these unknowns that were proposed by the study authors based on this analysis are provided in Appendix B. Isoxaben photodegrades comparatively slowly in soil, with a corrected environmental photodegradation half-life in soil of 49 days in sandy loam soil at pH 7.0 and 0.99% organic carbon (MRID 47428403).

Isoxaben does not readily biodegrade in soil under aerobic or anaerobic conditions, with half lives of greater than 150 days. In four foreign soils held under aerobic conditions, isoxaben degraded with half-lives of 161 days (sandy loam), 210 days (silt loam), 277 days (silt loam), and 866 days (sand) (MRID 47140004). Overall recoveries were greater than 90%. The only major degrade identified in the study was hydroxisoxaben. The study was classified as supplemental, as all of the soils were foreign and it was unclear if they were comparable to soils in the United States. Loam soil was incubated anaerobically for 60 days after 60 days of aerobic

incubation (MRID 41106302). Isoxaben degraded with a half-life of 224 days. Overall recoveries were greater than 90%. The only major degradate identified in the study was hydroxisoxaben. The study was classified as acceptable.

Primary routes of biodegradation are in aerobic and anaerobic water bodies. In two aerobic aquatic systems (brook water-sand sediment and brook water-sandy loam sediment), isoxaben degraded with a half-life of 21 days (MRID 46393202). Major degradates include dimethoxybenzamide and AEM hexenoyl-isoxaben. The study was classified as acceptable. In an anaerobic aquatic system (water and sandy clay loam soil), isoxaben degraded with a half-life of 18 days (MRID 46393201). Overall recoveries were above 90%. Major degradates include dimethoxybenzamide, methoxyphenylpyrimidinol, and AEM hexenoyl-isoxaben. The study was classified as acceptable.

c. Field Studies

Two terrestrial field dissipation studies were conducted for isoxaben using five sites in the United States. Two of the studies were conducted on turf plots (MRIDs 40059508 and 40532102); the spring and autumn treated turf plots in Florida (sand) were level grade while the plot in Illinois (clay loam) had a slope of 5-10%. The remaining plots were bare ground (MRID 40059508); the plot in Indiana (loam sand) had a slope of 2% and the Texas (sandy loam) plot was level grade. Of the five sites, only the Indiana site reported subsurface drainage. Turf applications were made using a backpack sprayer while bare soil applications were made using a tractor-drawn boom. Isoxaben, as a 75% dry flowable concentrate, was applied to all plots at a rate of 1.0 lbs ai/A. Florida sites were irrigated with 0.2 inches (spring) and 0.5 inches (fall) of water following treatment, with additional irrigation applied during the May to September timeframe if less than 0.1 inches per day occurred. A total of 74 inches of rain (plus irrigation) were received in Florida over 313 days, 28 inches in Illinois over 211 days, 13 inches in Indiana over 127 days, and 21 inches in Texas over 182 days. Samples were collected to a maximum depth of 24 inches in Florida and 12 inches in Indiana and Texas. Samples were analyzed for isoxaben and the degradate hydroxyisoxaben. In the majority of terrestrial field dissipation studies, isoxaben was equal to or less than 1% in soil samples collected at depths greater than 6 inches. However, one sample in Florida (MRID 40531202) had an isoxaben level of 2% at a depth of 6-12 inches at 129 days after application. The study noted that the water table at the site was within 10 inches of the surface and that potential groundwater contamination could have occurred. In all but one of the terrestrial field dissipation studies, hydroxyisoxaben was $\leq 1\%$ of the applied in all soil samples collected below 6 inches. However, in a Florida study (MRID 40532101), was detected in four soil samples at depths of 15-30 cm at levels $\leq 2\%$ of the applied. The limit of detection (LOD) in the studies was 0.01 lbs ai/A (MRID 40059508) and 0.02 lbs ai/A (MRID 40532102). Half-lives for isoxaben ranged from 34 to 147 days.

A third field dissipation study (MRID 00250449/00153107) was conducted using two outdoor lysimeter-enclosed bareground plots (0.656 m²) of silt loam soil in Indiana. In the first test, isoxaben (¹⁴C isoxaben labeled on the carbonyl carbon) was applied at a target rate of 250 g ai/ha (0.22 lbs ai/A) to two plots seeded with winter barley in October, 1980. In a second test, isoxaben was applied at a target rate of 150 g ai/ha (0.13 lbs ai/A) to two plots (one plot received

¹⁴C isoxaben labeled on the carbonyl carbon while the second plot received ¹⁴C isoxaben labeled in the 5-position on the isoxazole ring) which were maintained free of vegetation in November, 1981. Soil samples were collected to a depth of 15 cm in the first test and 37.5 cm in the second test. In the second test radiolabeled isoxaben was not detected below 15 cm until week 50 and was always below 4%. The half-life for isoxaben ranged from 122 to 134 days. In the second test, two degradates were identified in samples collected to a depth of 15 cm: hydroxyisoxaben and hydroxyethylisoxaben. The maximum amount of hydroxyisoxaben occurred on Day 32 at 8.6% of the applied amount and declined to 4.6% at Day 100. The maximum amount of hydroxyethylisoxaben occurred on Day 86 at 3.9% of the applied amount and declined to 3.8% at Day 100. This study was classified as supplemental, as the use of lysimeter plots were not truly representative of field plots due to their limited size.

d. Bioconcentration

Isoxaben residues accumulated in bluegill sunfish with maximum bioconcentration factors of 14x in edible tissue, 134x in non-edible tissue, and 70x in whole fish tissue during 28 days of exposure (MRID 40059509). Residues accumulated by exposure day 28 were depurated quickly; at day 14 of depuration, isoxaben residues had been reduced by 92-99% in the edible, non-edible, and whole fish tissues. The study was classified as supplemental because isoxaben residues were incompletely characterized and residues in the whole fish tissue were not determined experimentally. Due to the relatively low K_{OW} and bioconcentration factors in fish, isoxaben is not expected to accumulate in aquatic or terrestrial food chains.

e. Degradates

Major biodegradates of isoxaben include hydroxyisoxaben, dimethoxybenzamide, methoxyphenylpyrimidinol, and AEM hexenoyl-isoxaben. Additionally, four major photolytic degradates (Unk 3, Unk 3i, Unk 5a, and Unk 5b) were detected but not conclusively identified (MRID 47140003). Chemical names, structures, and fate data for these degradates are provided in Appendix B. Based on structural analysis of the biodegradates in EPISuite, three of the biodegradates (hydroxy isoxaben, dimethoxy benzamide, and AEM hexenoyl isoxaben) have the potential to be more mobile than isoxaben, with methoxyphenyl pyrimidinol appearing to be very immobile. As mentioned above, hydroxyisoxaben was detected in all of the terrestrial field studies. In two of the studies (MRIDs 40059508 and 40532102), hydroxyisoxaben was $\leq 1\%$ of the applied in all soil samples collected below 6 inches. However, in the Florida study (MRID 40532101), was detected in four soil samples at depths of 15-30 cm at levels $\leq 2\%$ of the applied. In a third study (MRID 00250449/00153107), the degradate hydroxyisoxaben was detected in samples collected to a depth of 15 cm. Hydroxyisoxaben was $\leq 9\%$ of the applied in all soil samples collected below 15 cm.

f. Residues of Concern

Major degradates detected during aerobic and anaerobic soil metabolism studies and aerobic and anaerobic aqueous metabolism studies include: hydroxyisoxaben; dimethoxybenzamide; methoxyphenylpyrimidinol and amino ethyl methyl (AEM) hexenoylisoxaben. Additionally, four major photolytic degradates (Unk 3, Unk 3i, Unk 5a, and

Unk 5b) were detected but not conclusively identified (MRID 47140003). The Health Effects Division (HED) evaluated the isoxaben residues of concern for human health. Because the formation of the photodegradates was considered minimal (e.g., formed only during aqueous photolysis) and a structural activity relationship (SAR) analysis performed by HED concluded that none of these degradates were expected to be more toxic than the parent compound, these photodegradates were not of exposure concern and were excluded as residues of concern. HED concluded that the major degradates detected during the aerobic and anaerobic soil and aqueous metabolism studies were not expected to be more toxic to humans than the parent compound, but data were not available to exclude them as residues of concern. As such, the degradates hydroxyisoxaben, dimethoxybenzamide, methoxyphenylpyrimidinol, and AEM hexenoylisoxaben were included with isoxaben as residues of concern for human health (USEPA, 2010).

For this assessment, in the absence of ecotoxicity data, these degradates were included as residues of concern for aquatic organisms using a total toxic residue (TTR) analysis. Using fate data for isoxaben and the degradates of concern, half-lives were recalculated for the TTR, as provided in **Table 5**.

Table 5. Physical/chemical properties and environmental fate source data for residues of concern		
Property	Value	Source
Aqueous Photolysis Half-life (@ pH 7; in days)	6 - 15	MRID 47140003
Soil Photolysis Half-life (days)	63	MRID 47428403
Aerobic Soil Metabolism Half-life (days)	206 (sandy loam) 342 (silt loam) 358 (silt loam) 1,116 (sand)	MRID 47140004
Anaerobic Soil Metabolism Half-life (days)	446	MRID 41106302
Aerobic Aquatic Metabolism Half-life (days)	62 (sand) 166 (sandy loam)	MRID 46393202
Anaerobic Aquatic Metabolism Half-life (days)	265	MRID 46393201
Freundlich Adsorption Coefficient (mL/g) (K_d)	0.81 (isoxaben, sand) 2.48 (isoxaben, sandy loam) 4.41 (isoxaben, loam) 6.63 (isoxaben, clay loam) 2.18 (isoxaben, loamy sand) 0.06 (hydroxyisoxaben, sand) 0.22 (hydroxyisoxaben, sandy loam) 0.37 (hydroxyisoxaben, loam) 0.84 (hydroxyisoxaben, clay loam) 0.3 (hydroxyisoxaben, loamy sand)	MRID 41106303

g. Transport and Dissipation Pathways

In addition to its degradation via aquatic metabolism and aqueous photolysis (in clear, shallow water), isoxaben and its degradates are likely to dissipate off site mainly via leaching

through soil and runoff of dissolved residues from treated fields. Deposition off-field or into surface water via spray drift may also occur. Isoxaben and its degradates are not expected to be subject to soil, water, or air transport via soil-bound residues (very low adsorption) or atmospheric transport via partitioning to air through spray drift or volatilization (low vapor pressure).

2. Measures of Aquatic Exposure

a. Surface Water Aquatic Exposure Modeling

In order to model aquatic EECs of isoxaben originating from ground applications to control broadleaf weeds around bearing nut trees and grape vineyards, PRZM scenarios were modeled. Sensitivity analysis of PRZM indicates that precipitation and curve number (CN) contribute significantly to variability in EECs (FEMVTF 2001). For grapes, scenarios representing wine grape vineyards in San Francisco, CA and grapes grown in New York were modeled. While isoxaben use is prohibited in New York by the proposed label, the New York grape scenario was used as a surrogate for grapes grown on the east coast of the United States. Modeling was conducted for bearing nut trees using the Georgia pecan, the Oregon filbert, and the California almond scenarios. These scenarios are used as surrogates for the bearing nut tree orchards on the proposed label (*e.g.*, almonds, beech nut, Brazil nut, butternut, cashew, chinquap, filbert, hickory nut, macadamia nut, pecan, pistachio, and walnuts). For this assessment, only the highest exposure values (*e.g.*, those from the New York grape and Georgia pecan scenario) have been reported. In less vulnerable areas, EECs may be substantially reduced (*i.e.* > 25%).

b. Input Parameters

Input parameters for the PRZM/EXAMS model for applications to bearing nut tree orchards and grape vineyards appear in **Table 6**, respectively; data source and comments accompany values for each parameter. SCI-GROW input parameters are presented in **Table 7**. Methods used to derive input values are consistent the EFED Input Parameter Guidance.

Table 6. PRZM/EXAMS input parameters for isoxaben applied to bearing nut tree orchards and grape vineyards			
Input Parameter	Value	Source	Comment
Application Rate in lbs ai/A (kg ai/ha)	1.0 (1.21)	Proposed label.	The maximum proposed application rate considered for this assessment is 1.0 lbs ai/acre/application, with a total annual application rate of 1.0 lbs ai/acre.
Applications per Year	1	Proposed label.	
Application Intervals (days)	NA	Proposed label.	
Modeled Scenario	Grapes: NY Grapes Nut Trees: GA Pecan		
Date of Initial Application	Grapes: September 14 Nut trees: September 21	---	Selected day with largest precipitation event between emergence and harvest dates.

Table 6. PRZM/EXAMS input parameters for isoxaben applied to bearing nut tree orchards and grape vineyards

Input Parameter	Value	Source	Comment
CAM	1	Proposed label	---
IPSCND	1	Proposed label	
Molecular Weight (g/mol)	332.39	Product chemistry data.	---
Henry's Law Constant (atm-m ³ /mol)	8.5x10 ⁻¹⁰	---	Calculated using vapor pressure, molecular weight, and solubility.
Solubility in Water at 25°C (mg/L)	1.0	MRID 40059506	
Freundlich Adsorption Coefficient (mL/g) (K _d)	3.3 (isoxaben) 0.36 (hydroxyisoxaben)	MRID 41106303	Mean K _d value. ¹
Application Efficiency	0.99		Input parameter guidance. ¹
Spray Drift Fraction	0.01		Input parameter guidance. ¹
Aerobic Soil Metabolism Half-life (days)	710 (TTR)	MRID 47140004	Represents the 90 th percentile of the upper confidence bound on the mean (450) of 5 TTR half-life values. ¹
Aerobic Aquatic Metabolism Half-life (days)	274 (TTR)	MRID 46393202	Represents the 90 th percentile of the upper confidence bound on the mean (114) of 2 TTR half-life values. ¹
Anaerobic Aquatic Metabolism Half-life (days)	795 (TTR)	---	3 x single half-life. ¹
Hydrolysis Half-lives (days)	Stable	MRID 00250449	No significant degradation in study.
Aqueous Photolysis Half-life (days)	15 (TTR)	MRID 47140003	Maximum dark control corrected half-life. ¹

¹ EFED input parameter guidance is located at:
http://www.epa.gov/oppefed1/models/water/input_parameter_guidance.htm.

Table 7. SCI-GROW input parameter values for isoxaben and its degradates

Input Parameter	Value	Source	Comment
Aerobic Soil Metabolism Half-life (days)	342 (TTR)	MRID 47140004	Median value ¹
Organic Carbon Normalized Partition Coefficient K _{oc}	434 (isoxaben) 57 (hydroxyisoxaben)	MRID 41106303	Values derived from regression analysis. See discussion below.
Application Rate (lb ai/A)	1	Proposed label	—
Maximum No. of Applications/Year	1	Proposed label	—

¹ EFED input parameter guidance is located at: http://www.epa.gov/oppefed1/models/water/input_parameter_guidance.htm.

Because isoxaben has a number of major degradates with similar toxicity as isoxaben, a total toxic residue (TTR) approach was used in the modeling. Half-lives for all of the studies were estimated for the TTR by summing the amounts of isoxaben, hydroxyisoxaben, dimethoxybenzamide, methoxyphenylpyrimidinol, and AEM hexenoylisoxaben for each sampling period and performing a regression on the log-transformed data. For adsorption to soil, a regression analysis of the adsorption coefficients versus the organic carbon content yielded a p -value > 0.1 ; as such, the K_{oc} model was deemed inappropriate and soil-water partition coefficient (K_d) values were used in the modeling. Per EFED's Input Parameter Guidance, the arithmetic mean of the K_d values was used. However, a mobility study (MRID 41106303) and EPISuite analysis indicated that several of the isoxaben degradates were more mobile than the parent. As such, two sets of PRZM/EXAMS and SCI-GROW modeling runs were completed: one set using the mobility estimates of the parent ($K_d = 3.3$ mL/g) and one set using mobility estimates derived from the degrade study ($K_d = 0.36$ mL/g).

While aerial application of isoxaben on bearing nut tree orchards and grape bearing vineyards was not specifically prohibited on the label, EFED modeled ground application of isoxaben because: (1) isoxaben is a preemergence herbicide proposed for control of broadleaf weeds; and, (2) aerial application of isoxaben on bearing nut tree orchards and grape vineyards would likely destroy the crops it is meant to protect. It should be noted that aerial application of pesticides normally results in higher EECs. As such, higher concentrations would be expected if isoxaben had been modeled using the aerially application method. For the PRZM input "chemical application method" (CAM), a value of 1 was selected to represent foliar applications for grape vineyards and bearing nut tree orchards. For the PRZM input "condition for disposition of foliar pesticide after harvest" (IPSCND), a value of 1 was selected for both applications as the pesticide is surface applied to control broadleaf weeds. Ground applications were modeled, using a spray drift fraction of 0.01 and an application efficiency of 0.99, per the Input Guidance. Application dates were selected by examining the precipitation events in the corresponding meteorological files and selecting the date with the highest precipitation that fell between the emergence date and the harvest date for the respective crop.

c. Modeling Results

PRZM/EXAMS EECs representing 1-in-10-year peak, 21-day, and 60-day average concentrations are located in **Table 8**. SCI-GROW EECs are presented in **Table 9**.

Table 8. PRZM/EXAMS-simulated EECs for isoxaben applied at maximum application rates to grape vineyards and bearing nut tree orchards			
Scenario	1-in-10 yr Peak ($\mu\text{g ai/L}$)	21-d Avg Conc ($\mu\text{g ai/L}$)	60-d Avg Conc ($\mu\text{g ai/L}$)
<i>Parent K_d Data ($K_d = 3.3$ mL/g)</i>			
Grapes	14.2	13.9	13.2
Bearing Nut Trees	22.2	19.4	18.1
<i>Degradate K_d Data ($K_d = 0.36$ mL/g)</i>			
Grapes	12.0	12.0	11.5
Bearing Nut Trees	18.0	17.1	16.0

Table 9. SCI-GROW EECs for isoxaben applied at maximum application rates to grape vineyards and bearing nut tree orchards (µg ai/L).

Scenario	Acute (µg ai/L)	Chronic (µg ai/L)
<i>Parent K_d Data (K_d = 3.3 mL/g)</i>		
Grapes / Bearing nut trees	0.71	0.71
<i>Degradate K_d Data (K_d = 0.36 mL/g)</i>		
Grapes / Bearing nut trees	14.5	14.5

FN-3133 may not be applied more than twice per crop year up to a maximum total of 1.0 lb ai/A per crop year. As such, EFED performed PRZM/EXAMS and SCIGROW runs for two applications of isoxaben at 0.5 lbs ai/acre/application, using the scenario with the highest EECs, bearing nut trees. As the label does not specify a retreatment interval (RTI), EFED conducted PRZM/EXAMS runs at RTIs of 3, 7, 15, 30, 60, 90, 120, and 180 days, using the same fate parameters outlined in **Table 8** and a K_d of 3.3 mL/g. SCIGROW runs were conducted using the same fate parameters as presented in **Table 9**. Results for all model runs indicate EECs were at or below the values derived for a single application of isoxaben to bearing nut tree orchards.

e. Monitoring Data

Isoxaben is not included as one of the analytes monitored in U.S. surface and groundwater under the USGS's National Water Quality Assessment (NAWQA) program (<http://water.usgs.gov/nawqa>). Surface water and sediment monitoring data from the California Department of Pesticide Regulation (CDPR) indicate that six surface water samples were collected and analyzed for isoxaben in 2006 in Stanislaus County, but all of the reported concentrations were 0 µg/L. The database did not provide the limit of detection for these samples, so it is unclear what the concentration truly was. Monitoring data for isoxaben degradates were not available.

3. Measures of Terrestrial Exposure

The proposed application method for isoxaben being evaluated is ground broadcast spray. This application method can result in various routes of exposure to non-target terrestrial organisms, including ingestion of treated foods, spray drift and runoff. The label specifies no more than two applications per year but does not specify limitations on application intervals. The seasonal maximum application (1.0 lbs ai/A) can be applied at one time.

a. Terrestrial Animals

Exposure estimates for terrestrial animals assumed to be in the target area or in an area exposed to spray drift are derived using the T-REX model (version 1.4.1, 10.09.2008). This model incorporates the Kenaga nomograph, as modified by Fletcher *et al.* (1994), which is based on a large set of actual field residue data. The upper limit dietary-based values (**Table 10**) from the nomograph represent the 95th percentile of residue values from actual field measurements (Hoerger and Kenaga, 1972) and are based on the proposed maximum single application rate of 1.0 lb a.i./Acre.. The Fletcher *et al.* (1994) modifications to the Kenaga nomograph are based on

measured field residues from 249 published research papers, including information on 118 species of plants, 121 pesticides, and 17 chemical classes.

Table 10. Unadjusted* Dietary EECs from TREX v1.4.1 based on a single application of 1 lb ai/acre.

Terrestrial Animal Forage Item	Dietary-based EECs (mg ai/kg diet)
Short Grass	240.00
Tall Grass	110.00
Broadleaf plants/sm Insects	135.00
Fruits/pods/seeds/lg insects	15.00

*not adjusted for size class or nutritive value of food item

b. Terrestrial Plants

Exposure to upland and wetland plants is estimated using the TerrPlant (v1.2.2) screening model and AgDRIFT (v2.01). TerrPlant estimates potential exposure from a single application using default assumptions for runoff and spray drift (**Table 11**). For runoff plus drift, TerrPlant incorporates two similar conceptual models for depicting dry and semi-aquatic (wetland) areas of terrestrial habitats. For both scenarios, a non-target area is adjacent to the treated field. Herbicide exposures to plants adjacent to the treated field are estimated to receive runoff and drift from the treated field. For a dry area adjacent to the treated orchard or vineyard, runoff exposure is estimated as sheet runoff. In the model, sheet runoff is defined as the amount of herbicide in water that runs off of the soil surface of a treated field which is equal in size to the non-target area (1:1 ratio of areas). For wetland areas, runoff exposure is estimated as channelized runoff. In the model, channelized runoff is the amount of herbicide that runs off of a treated orchard or vineyard 10 times the size of the area adjacent to the treated orchard or vineyard (10:1 ratio of areas). Estimated exposures through runoff plus drift and drift alone are then compared to measures of plant survival and growth (*e.g.* effects to seedling emergence and vegetative vigor) to develop RQ values. AgDRIFT provides point estimates of mass deposition at distances from the application site.

Table 11. EECs for isoxaben (lbs ai/A) based on the proposed maximum single application rate of 1.0 lb ai./Acre.

Description	Equation	EEC
Runoff to dry areas	$(A/I)*R$	0.001
Runoff to semi-aquatic areas	$(A/I)*R*10$	0.01
Spray drift	$A*D$	0.001
Total for dry areas	$((A/I)*R)+(A*D)$	0.002
Total for semi-aquatic areas	$((A/I)*R*10)+(A*D)$	0.011

B. Ecological Effects Characterization

All toxicity studies were conducted with isoxaben, with the exception of terrestrial plant studies, which were conducted with a formulated product, *i.e.*, FN-3133. A search of the

publically available ECOTOX database (05/04/2010) resulted in no relevant open literature toxicity data.

1. Aquatic Effects Characterization

The registrant has submitted a suite of studies, as required by CFR 40 Part 158³, which examine the toxicity of isoxaben to representative aquatic organisms that serve as surrogates for organisms that may be exposed. Both acute and chronic effects were determined for freshwater fish and invertebrates. Acute effects on marine/estuarine fish and invertebrates and aquatic vascular and nonvascular plants were also examined. However, some data gaps remain and will be discussed later in the document.

a. Aquatic Animals

i. Effects from Acute Exposure

Most of the available aquatic effects studies were conducted at nominal concentrations of 0 (control) and 100 mg ai/L. Very few were conducted with a co-solvent, and the water solubility of isoxaben is 1 mg/L. There was no reported effort to centrifuge or filter the solute. If the solutions were actually prepared with a nominal concentration of 100 mg ai/L and the measured concentration is roughly 1 mg ai/L in the acute studies, a precipitate should have been reported. However, no precipitate is reported for any of the available studies.

Freshwater Fish

In 96-h acute toxicity studies, rainbow trout (*Oncorhynchus mykiss*; MRID 00132146), bluegill sunfish (*Lepomis macrochirus*; MRID 00132145) and common carp (*Cyprinus carpio*; MRID 00137844) were exposed to isoxaben at mean-measured concentrations of 0 (negative control) and 1.0 mg ai/L. No sub-lethal effects were observed in any study. The LC₅₀ and NOAEC values (**Table 12**), based on a lack of mortality and sub-lethal effects, were >1.0 and 1.0 mg ai/L. Based on the results of these studies, isoxaben is classified as moderately toxic to freshwater fish on an acute exposure basis.

Table 12. Freshwater fish and amphibian acute toxicity for technical grade isoxaben.

Species	96-hour LC ₅₀ mg ai/L	Toxicity Category	MRID No.	Study Classification
Rainbow trout (<i>Oncorhynchus mykiss</i>)	>1.0	Moderately toxic	00132146	Supplementa
Bluegill sunfish (<i>Lepomis macrochirus</i>)	>1.0	Moderately toxic	00132145	Supplemental
Common carp (<i>Cyprinus carpio</i>)	>1.0	Moderately toxic	00137844	Supplemental

³ Code of Federal Regulations 40, Part 158.subpart 630. Terrestrial and aquatic nontarget organism data requirements.

<http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr;sid=fe712efed37d095118c7637457e011b3;rgn=div5;view=text;node=40%3A23.0.1.1.9;idno=40;cc=ecfr#40:23.0.1.1.9.7.1.1>

Estuarine/marine Fish

In a 96-h acute toxicity study, sheepshead minnows (*Cyprinodon variegatus*; MRID 40531304) were exposed to isoxaben at time-weighted average (TWA) concentrations were <0.02 (<LOQ; controls) and 0.86 mg ai/L. The 96-h LC₅₀ was >0.86 mg ai/L. The LC₅₀ and NOAEC values (**Table 13**), based on a lack of mortality and sub-lethal effects, were 0.86 and >0.86 mg ai/L, respectively. Isoxaben is classified as moderately toxic to estuarine/marine fish at the limit of its water solubility.

Table 13. Estuarine/marine fish acute toxicity to technical grade isoxaben.

Species	96-hour LC ₅₀ mg ai/L	Toxicity Category	MRID No.	Study Classification
Sheepshead minnow (<i>Cyprinodon variegatus</i>)	>0.86	Moderately toxic	40531304	Supplemental

Freshwater Invertebrates

Water fleas, *Daphnia magna* (MRID 00132444), were exposed to isoxaben at mean-measured concentrations of 0 (control) and 1.3 mg ai/L. No effects were seen in either the control or treatment groups. Therefore the 48-h EC₅₀ and NOAEC were >1.3 mg ai/L and 1.3 mg ai/L, respectively (**Table 14**). Isoxaben is classified as moderately toxic -toxic to estuarine/marine fish at the limit of its water solubility.

Table 14. Freshwater invertebrate acute toxicity for technical grade isoxaben.

Species	96-hour LC ₅₀ mg ai/L	Toxicity Category	MRID No.	Study Classification
Waterflea (<i>Daphnia magna</i>)	>1.3	Moderately toxic	00132444	Supplemental

*at the limit of solubility

Estuarine/marine

Quahog clam larvae (*Mercenaria mercenaria*; MRID 40531302) were exposed to isoxaben at for 48-h under static conditions. Larvae were exposed to mean-measured concentrations of <0.02 (<LOQ; negative control) and 0.96 mg ai/L. The 48-hr EC₅₀ was >0.96 mg ai/L (**Table 15**). The NOAEC was <0.96 mg ai/L, based on a 40% reduction in normally developed larvae. The only observed toxic effect was an inhibition of normal larval development. It is not clear from the study how 'normal larvae' is differentiated from 'abnormal larvae'. Isoxaben is classified as moderately toxic to this species; however, the 40% effect on larval developmental is discussed further in the Risk Description..

Grass shrimp (*Palaemonetes pugio*; MRID 40531303) demonstrated no effect from exposure to a measured concentration of 1 mg ai/L of isoxoaben. Isoxaben is classified as moderately toxic to this species at the limit of its water solubility

Table 15. Estuarine/marine invertebrate acute toxicity for technical grade isoxaben.

Species	96-hour LC ₅₀ mg ai/L	Toxicity Category	MRID No.	Study Classification
Quahog clam (<i>Mercenaria mercenaria</i>)	>0.96	Moderately toxic	40531302	Supplemental
Grass shrimp (<i>Palaemonetes pugio</i>)	>1.0	Moderately toxic	40531303	Supplemental

ii. Effects from Chronic Exposure

Aquatic vertebrates

A 66-day early-life stage study of the effect of chronic exposure of isoxaben to rainbow trout (MRID 00137847) was conducted under flow-through conditions. Fertilized eggs/embryos (100/level, early-eyed stage) of rainbow trout were exposed to mean-measured concentrations of <0.002 (<LOD, controls), 0.024, 0.048, 0.093, 0.19, and 0.42 mg ai/L, respectively. No treatment-related effects were observed on any measured parameter during the study. The 66-day NOAEC and LOAEC were 0.42 and >0.42 mg ai./L, respectively (**Table 16**).

A 33-day early-life stage study of isoxaben with fathead minnows (*Pimephales promelas*; MRID 00137848) was conducted under flow-through conditions. Fertilized eggs/embryos (100/level, <48 hours old) of fathead minnow were exposed to mean-measured concentrations of <0.002 (<LOD, controls), 0.025, 0.048, 0.095, 0.18, and 0.40 mg ai/L, respectively. No treatment-related effects were observed on any measured parameter during the study. The 33-day NOAEC and LOAEC values were 0.40 and >0.40 mg ai/L, respectively.

Table 16. Early life-stage toxicity of technical grade isoxaben to freshwater fish.

Species	NOAEC mg ai/L	LOAEC mg ai/L	Endpoints Affected	MRID No.	Study Classification
Rainbow trout (<i>Oncorhynchus mykiss</i>)	0.42	>0.42	None	00137847	Supplemental
Fathead minnow (<i>Pimphales promelas</i>)	0.40	>0.40	None	00137848	Supplemental

No chronic toxicity data were submitted for estuarine/marine fish. However, given the reported effect on estuarine/marine invertebrates in the acute exposure study, these data are needed for risk assessment purposes.

Aquatic Invertebrates

In a 21-day static renewal life-cycle study, first instar daphnids (MRID 00137845) were exposed to isoxaben at mean-measured concentrations of 0 (control), 0.13, 0.69 and 1.01 mg ai/L. No effects were observed in the control, 0.13 or 0.69 mg ai/L treatment groups (**Table 17**), but 13% of the daphnids were immobilized in the highest treatment group. Additionally,

statistically significant effects were reported for growth and reproduction (brood size) at the highest treatment concentration. The NOAEC and LOAEC for the study are 0.69 mg ai/L and 1.01 mg ai/L, respectively, based on impaired growth and reproduction.

Table 17. Freshwater invertebrate full life-cycle toxicity for technical grade isoxaben.

Species	NOAEC mg ai/L	LOAEC mg ai/L	Endpoints Affected	MRID No.	Study Classification
Waterflea (<i>Daphnia magna</i>)	0.69	1.01	None	00137845	Supplemental

No chronic toxicity data were submitted for estuarine/marine invertebrates. However, given the effects observed on larval development in the acute Quahog clam study suggest these data are necessary for risk assessment.

b. Aquatic Plants

Three studies assessing the effect of isoxaben on the aquatic vascular plant duckweed, *Lemna gibba*, are available (**Table 18**). In a 14-day toxicity study, the freshwater floating aquatic vascular plant duckweed (MRID 47428401) was exposed to isoxaben (technical grade active ingredient;TGAI) at mean-measured concentrations of <0.5 (<LOQ, control), 5.8, 13, 24, 46, and 93 µg ai/L. A NOAEC was not defined in the study. The EC₀₅ and EC₅₀ values for decreased biomass, the most sensitive endpoint, were 2.9 and 13 µg ai/L, respectively. Inhibition in biomass in the treatment groups ranged from 13 to 96%.

In a 7-day acute toxicity study, duckweed (MRID 47428402) was exposed to isoxaben TGAI at mean-measured concentrations of <0.50 (<LOQ, control), 3.1, 6.0, 12.3, 23.6, and 45.9 µg ai/L. The 7-day NOAEC and EC₅₀ values for biomass inhibition, the most sensitive endpoint, were 6.0 and 10 µg ai/L, respectively. The inhibition in biomass in the treatment groups ranged from -1 to 95%.

In a 14-day acute toxicity study (MRID 47428406), duckweed was exposed to Isoxaben[®] 500 SC (formulation) at mean-measured concentrations of <0.5 (<LOD, control), 5.1, 10.1, 20.3, 38.5, 84.2 and 172.1 µg ai/L. The 14-day NOAEC and EC₅₀ values for biomass inhibition, the most sensitive endpoint, were 10.1 and 15 µg ai/L, respectively. A hormetic (low-dose stimulatory) effect of 18% increased biomass was seen at the lowest test concentration. In the remaining treatment groups, percent inhibition in biomass ranged from 6 to 95%.

Studies of nonvascular plants are also required and typically involve microalgae. A supplemental 14-day static study reports a NOAEC of 1.4 mg ai/L for the green algae *Pseudokirchneriella subcapitata* (formerly *Selenastrum capricornutum*). The study is from 1984, before microalgae studies were routinely submitted to the Agency; raw data were not included and the study is not consistent with Agency guidelines. A complete suite of the four aquatic nonvascular plant studies has been requested in the Registration Review process.

Table 18. Toxicity of technical grade isoxaben to aquatic plant species.

Species/ (duration)	% ai	EC ₅₀ µg ai/L	NOAEC µg ai/L	MRID	Study Classification
Duckweed (<i>Lemna gibba</i>) (14 days)	Technical	13	2.9	47428401	Supplemental
Duckweed (<i>Lemna gibba</i>) (7 days)	Technical	10	6	47428402	Supplemental
Duckweed (<i>Lemna gibba</i>) (14 days)	FormulationI	15	10.1	47428406	Supplemental
Green algae (<i>Pseudokirchneriella subcapitata</i>)	Technical	>1400*	1400*	00153111	Supplemental

*Supplemental data not used in Risk Estimation

2. Terrestrial Effects Characterization

The registrant has submitted a battery of studies that examine the toxicity of isoxaben to representative terrestrial organisms that stand as surrogates for animals and plants at risk of exposure. Effects of acute and chronic exposure were evaluated for mammals; data are also available for birds which serve as a surrogate for terrestrial-phase amphibians and reptiles. Data on the effects of isoxaben on terrestrial invertebrates are available with studies of the honeybee (*Apis mellifera*). The toxicity of isoxaben to terrestrial plants was evaluated using representative monocotyledonous (monocots) and dicotyledonous (docots) plants.

a. Terrestrial Animals

i. Effects from Acute Exposure

Birds

The acute oral toxicity of isoxaben to 20-wk-old bobwhite quail (*Colinus virginianus*; MRID 00132146) was assessed over 14 days. Isoxaben was administered by oral gavage at nominal doses of 0 (vehicle control), 125, 250, 500, 1000 and 2000 mg/kg. The 14-day acute oral LD₅₀ was >2000 mg/kg-bw (**Table 19**). Since no effects were observed in any of the treatment levels, the 14-day NOAEL, based on a lack of treatment-related effects, was 2000 mg/kg-bw. Isoxaben is classified as practically non-toxic to bobwhite quail (*Colinus virginianus*) on an acute oral exposure basis.

Table 19. Avian acute oral toxicity for technical grade isoxaben.

Species	LD ₅₀ (mg ai/kg bw)	Toxicity Category	MRID	Study Classification
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Species	LD ₅₀ (mg ai/kg bw)	Toxicity Category	MRID	Study Classification
Northern bobwhite quail (<i>Colinus virginianus</i>)	>2000	Practically non-toxic	00132146	Acceptable

The subacute dietary toxicity of isoxaben to 12-d old bobwhite quails (*Colinus virginianus*; MRID 00132142) was assessed over 8 days (5 days with treated feed and 3 days with basal diet). Isoxaben was administered to the birds in their diet at measured concentrations of 0 (negative control), 56, 180, 480, 1500, and 4500 mg ai/kg diet. The 8-day subacute dietary LC₅₀ was >4500 mg ai/kg diet (**Table 20**). The NOAEC, based on a lack of treatment-related effects, was 4500 mg ai/kg-diet. Isoxaben is considered to be practically nontoxic to bobwhite quail on an subacute dietary exposure basis.

The subacute dietary toxicity of isoxaben to 10-d-old mallard ducks (*Anas platyrhynchos*; MRID 00132143) was assessed over 8 days. Measured concentrations were 0 (negative control), 63, 190, 540, 1600, and 4800 mg ai/kg diet. The 8-day subacute dietary LC₅₀ was >4800 mg ai/kg diet. The NOAEC, based on a lack of treatment-related effects, was 4800 mg ai/kg diet. Isoxaben is considered to be practically nontoxic to mallard ducks on an subacute dietary exposure basis

Table 20. Avian subacute dietary toxicity for technical grade isoxaben.

Species	LC ₅₀ (mg ai/kg diet)	Toxicity Category	MRID	Study Classification
Northern bobwhite quail (<i>Colinus virginianus</i>)	>4500	Practically non-toxic	00132142	Acceptable
Mallard duck (<i>Anas platyrhynchos</i>)	>4800	Practically non-toxic	00132143	Acceptable

Mammals

Rats (*Rattus norvegicus*) are typically used as surrogates for all mammals, and the data are typically reviewed by the Health Effects Division (HED). The following paragraph is taken directly from the HED ‘Toxicology Chapter of the New Chemical Registration of Isoxaben’ (125851_121587_TX006559_R023250.tif).

‘Sufficient data are available to show that Technical Isoxaben is not lethal to laboratory animals when taken by the oral route (MRID MJ031, MJ032). All test rats (10/sex) survived a 14 day study in which Technical Isoxaben was administered orally by gavage at a dose of 10,000 mg/kg in approximately 34 ml/kg dosage volume (category IV). In a study with mice (10/sex), all animals survived to 14 days after a dose of 10,000 mg/kg (category XV).’

Therefore the LD₅₀ used in this assessment is >10,000 mg ai/kg-bw (**Table 21**) and is classified as practically nontoxic to mammals on an acute oral exposure basis.

Table 21. Acute oral mammalian toxicity for isoxaben.

Species	LD ₅₀	Toxicity Category	Affected Endpoints	MRID No.	Classification
Wistar rat <i>Rattus rattus</i>	>10000 mg ai/kg-bw	practically non- toxic	none	MJ031, MJ032	Acceptable

Terrestrial Invertebrates

Honeybees (*Apis mellifera*) were exposed via contact to doses of isoxaben technical at 0 (control), 33.9, 67.4 and 101.7 µg ai/bee (MRID 0015311). No mortality or other subeffects were reported at any of the doses tested. The LD₅₀ for isoxaben is >101.7 µg ai/bee and isoxaben is classified as practically nontoxic to honeybees on an acute contact exposure basis.

ii. Chronic Effects

Birds

The one-generation reproductive toxicity study of isoxaben to 20 pairs per level of 17-week old northern bobwhite quail (*Colinus virginianus*; MRID 00153110) -was assessed over 24 weeks. Isoxaben was administered to the birds in the diet at mean-measured concentrations of <LOD (control), 105, 313, and 1073 mg ai/kg-diet, respectively. No treatment-related effects were observed on any adult or offspring parameter at any treatment level. Therefore the NOAEC and LOAEC for the study are 1073 and >1073 mg ai/kg-diet, respectively (**Table 22**).

The one-generation chronic toxicity of isoxaben to 12 pairs per level of 20-week old mallard duck (*Anas platyrhynchos*; MRID 00153109) was assessed over 23 weeks. Isoxaben was administered to the birds in their diet at mean-measured concentrations of <LOD (control), 100, 298, and 946 mg ai/kg-diet, respectively. The study is classified as ‘Supplemental’, because it provides insight into the potential for effects of chronic exposure of isoxaben to avian species, but the study is insufficient to provide a definitive endpoint. There was a significant reduction in the proportion of eggs hatched to live 3-wk old embryos, indicating reproductive effects at least as low as 298 mg ai/kg diet. There was a high percentage of cracked eggs in the control (11%), nearly double the high-end normal value (6%) as stated in the OPPTS 850.2300 harmonized guideline⁴; the elevated number of cracked eggs in the control raises uncertainty regarding the conditions under which the study was conducted. Furthermore, the number of eggs laid per hen was higher than expected (59 vs 38), and the mean percentage of viable embryos per eggs set was very low in the control (71% vs 85-98%). There was also an apparent effect on hatchling survival per egg set and the number of hatchlings per pen, but high control variability did not allow for statistical detection. Additionally, data for two important growth endpoints, hatchling weight and 14-d survivor weight were not provided. While these problems are not enough to invalidate the study, a definitive endpoint could not be determined.

⁴ USEPA 1996. Ecological Effects Test Guideline 850.2300 Avian Reproduction Test.
http://www.epa.gov/opptsfrs/publications/OPPTS_Harmonized/850_Ecological_Effects_Test_Guidelines/Drafts/850-2300.pdf

Table 22. Avian reproduction chronic toxicity for technical grade isoxaben.

Species	% a.e.	NOAEC (mg ai/kg diet)	LOAEC (mg ai/kg-diet)	MRID	Study Classification
Northern bobwhite quail (<i>Colinus virginianus</i>)	94.5 Technical	1073	>1073	00153110	Supplemental
Mallard duck (<i>Anas platyrhynchos</i>)	94.5 Technical	Not established	100	00153109	Supplemental

Mammals

Rats (*Rattus norvegicus*) are typically used as surrogates for all mammals, and the data are typically reviewed by HED. The following paragraph is taken directly from the HED ‘*Toxicology Chapter of the New Chemical Registration of Isoxaben*’ (125851_121587_TX006559_R023250.tif). It is worth noting that HED considered isoxaben to be a Class ‘C’ carcinogen.

‘Rats (25/sex/dose) were administered 0, 500, 2500, or 12500 ppm (0, 25, 125, or 625 mg/kg/day) Technical Isoxaben in the diet in a three generation reproduction study (MRID MJ019, core grade minimum). Parental female toxicity was demonstrated in lowered mean bodyweight, lowered mean bodyweight gain, and lowered food efficiency during growth, gestation and lactation at 2500 ppm and 12500 ppm. Parental male toxicity was found in lowered mean bodyweight during the growth phases. Both parental males and females showed increased mean relative liver weight at 12500 ppm and females only at 4500 ppm. (NOEL= 500 ppm). Reproductive toxicity was demonstrated at 12500 ppm in significantly ($p<0.05$) decreased numbers of viable pups born and depression in mean body weight of progeny on postpartum day 21 (NOEL = 2500 ppm).’

Therefore the NOAEL used in this assessment is 25 mg ai/kg-bw/day (Table 23)

Table 23. Chronic toxicity of isoxaben to mammals.

Species	% a.e.	NOAEL (mg ai/kg-bw)	LOAEL (mg ai/kg-bw)	MRID	Study Classification
Wistar rat (<i>Rattus norvegicus</i>)	94.5 Technical	25	125	MJ019	Supplemental

b. Terrestrial Plants

Seedling emergence testing (MRID 47428404) indicate monocot grass species (Family: Poaceae) tested were unaffected at treatment rates equivalent to an application rate of 0.888 lbs ai/A, the highest rate tested. However, only three monocot species were tested. Corn (*Zea mays*), a required test species, was not included in the study. Onion (*Allium cepa*), which typically represents non-graminoid monocot species such as lilies and orchids, was also not included. Among broadleaf plants (dicots), cucumber (*Cucumis sativus*) was unaffected at the highest rate tested, while fresh weight was affected in pea (*Pisum sativum*) and sugarbeet (*Beta vulgaris*). Emergence was the most sensitive endpoint for carrot (*Daucus carota*), lettuce (*Lactuca sativa*), oil seed rape (*Brassica napus*), and tomato (*Solanum lycopersicum*). Lettuce

was the most sensitive dicot ($EC_{25} = 0.0095$ lbs ai/A); a NOAEC was not established in the study, but the lettuce EC_{05} (0.0014 lbs ai/A) is used *in lieu* of a NOAEC.

Vegetative vigor testing (MRID 4748405) indicated that all species tested except wheat (*Triticum aestivum*) and tomato were at least somewhat sensitive to isoxaben. Among monocots, ryegrass (*Lolium perenne*) was particularly sensitive to isoxaben and was the most sensitive species tested ($EC_{25} = 0.014$ lbs ai/A; NOAEC 0.0034 lbs ai/A. As with the seedling emergence study, only three monocot species were tested. Corn, a required test species, was not included in the study. Onion, which typically represents non-graminoid monocot species such as lilies and orchids, was also not included. Among broadleaf plants, cucumber was the most sensitive species, with an EC_{25} of 0.089 lbs ai/A, and the NOAEC was 0.028 lbs ai/A. **Table 24** provides the most sensitive endpoints from all plant species tested.

Table 24. The most sensitive terrestrial plant endpoints (lbs ai/A) in the studies submitted for isoxaben.

Species	Seedling emergence			Vegetative vigor		
	Endpoint	NOAEC	EC_{25}	Endpoint	NOEC	EC_{25}
Oat	None	0.888	>0.888	Fresh weight	0.0069	>0.888
Ryegrass	None	0.888	>0.888	Fresh weight	0.0034	0.014
Wheat	None	0.888	>0.888	None	0.888	>0.888
Oilseed rape	Emergence	0.020*	0.028	Survival	0.444	<0.888
Pea	Fresh weight	0.056	0.29	Fresh weight	0.056	>0.056
Cucumber	None	0.888	>0.888	Fresh weight	0.028	0.089
Carrot	Emergence	0.0138	0.043	Fresh weight	0.0034	0.888
Lettuce	Emergence	0.0014*	0.0095	Fresh weight	0.056	>0.888
Tomato	Emergence	0.0067	0.016	Fresh weight	0.888	>0.888
Sugarbeet	Fresh weight	0.056	0.073	None	0.444	0.73

*- EC_{05} is used when calculated EC_{25} is less than derived NOAEC.

3. Ecological Incidents

Both the Agency's Ecological Incident Information System (EIIS) and the Avian Incident Monitoring System (AIMS;⁵) were checked for incidents involving isoxaben. No incidents involving animals were reported in either database as of 5/11/2010.

Five incidents involving plants are reported for isoxaben in EIIS (**Table 25**). Four of the incidents have a certainty index of 'Possible' and one as 'Unlikely' to involve the use of isoxaben. The 'Possible' incidents span 1994 to 2003 and involved ornamental and tree farm applications. The reported numbers of affected plants range from 298,346 to 676,000, and included woody plants. All incidents report the application rate as 1.0 lbs ai/A.

⁵ American Bird Conservancy. Avian Incident Monitoring System
<http://www.abcbirds.org/abcprograms/policy/pesticides/aims/aims/index.cfm> Accessed May 2010.

Table 25. Summary of incident information reported to the Agency as of 05/10/2010.

Incident ID	Use Site	Legality	Certainty	State	County	Year	Total No.	Total Area
I014702-017	Ornamental, woody	Registered use	Possible	CA	Santa Cruz	2003	35000	NR*
I013636-027	Ornamental	Registered use	Possible	OR	Washington	2002	NR	6 acres
I001485-001	Tree farm/plantation	Undetermined	Possible	NR	NR	1994	676000	NR
I010414-002	Ornamental	Registered Use	Possible	CA	Santa Cruz	2000	627405	6.5 acres
I006865-001	Nursery	Registered Use	Unlikely	OR	Multnomah	NR	298346	NR

*Not reported

IV. Risk Characterization

A. Risk Estimation

The risk quotient (RQ) approach, comparing the ratio of estimated exposure concentrations (EECs) to toxicity endpoints with predetermined levels of concern (LOC), is used in this assessment to estimate potential risk. If the RQs exceed the LOCs, the Agency presumes potential for risk to the taxa. These LOCs (**Table 26**) are the Agency's interpretive policy and are used to determine the need to consider regulatory action by indicating whether a pesticide, used as directed on the label, has the potential to cause adverse effects on non-target organisms. Although risk is often defined as the likelihood and magnitude of adverse ecological effect, the risk quotient-based approach does not provide a quantitative estimate of likelihood and/or magnitude of an adverse effect.

Table 26. Levels of concern (LOCs) for various taxa.

Risk Presumption	RQ	LOC
<i>Birds</i>		
Acute Risk to Non-listed Species	EEC/LC ₅₀ or LD ₅₀ /sqft or LD ₅₀ /day	0.5
Acute Restricted Use	EEC/LC ₅₀ or LD ₅₀ /sqft or LD ₅₀ /day (or LD ₅₀ < 50 mg/kg)	0.2
Acute Risk to Endangered Species	EEC/LC ₅₀ or LD ₅₀ /sqft or LD ₅₀ /day	0.1
Chronic Risk	EEC/NOAEC	1
<i>Wild Mammals</i>		
Acute Risk to Non-listed Species	EEC/LC ₅₀ or LD ₅₀ /sqft or LD ₅₀ /day	0.5
Acute Restricted Use	EEC/LC ₅₀ or LD ₅₀ /sqft or LD ₅₀ /day (or LD ₅₀ < 50 mg/kg)	0.2
Acute Risk to Endangered Species	EEC/LC ₅₀ or LD ₅₀ /sqft or LD ₅₀ /day	0.1
Chronic Risk	EEC/NOAEC	1
<i>Aquatic Animals</i>		
Acute Risk to Non-listed Species	EEC/LC ₅₀ or EC ₅₀	0.5
Acute Restricted Use	EEC/LC ₅₀ or EC ₅₀	0.1
Acute Risk to Endangered Species	EEC/LC ₅₀ or EC ₅₀	0.05

Risk Presumption	RQ	LOC
Chronic Risk	EEC/NOAEC	1
<i>Terrestrial and Semi-Aquatic Plants</i>		
Acute Risk to Non-listed Species	EEC/EC ₂₅	1
Acute Risk to Endangered Species	EEC/NOAEC or EC ₀₅	1
<i>Aquatic Plants</i>		
Acute Risk to Non-listed Species	EEC/EC ₅₀	1
Acute Risk to Endangered Species	EEC/NOAEC or EC ₀₅	1

Aquatic

Isoxaben is soluble in water to 1.0 mg ai/L, and the measured concentrations in the aquatic studies were at this reported limit of solubility. The studies were conducted in the 1980s and did not attempt to increase the solubility by use of a cosolvent, as recommend in current protocols. As previously mentioned, the reported nominal concentrations for most of the studies was 100 mg ai/L, however no precipitate was reported. All aquatic studies are considered supplemental.

Acute Fish

Because the LC₅₀ for fish is non-definitive (*i.e.* LC₅₀ > 0.86 mg ai/L), RQs are not presented. The EEC/LC₅₀ ratio calculated with the highest concentration tested for reference purposes (0.03) would not exceed the LOC for risk of acute mortality to listed species. Freshwater fish serve as surrogates for aquatic-phase amphibians. Since no mortality or sublethal effects were reported in the any of the freshwater or estuarine/marine fish studies, risk is considered low for these taxa.

Chronic Fish

No effects to freshwater fish from chronic exposure to isoxaben were reported up to the maximum concentration tested for fathead minnows, *i.e.* NOAEC=400 µg ai/L. The maximum 60-day TTR EEC is 21.1 µg ai/L and the resulting RQ is 0.05. The chronic RQ for freshwater fish of 0.05 is two orders of magnitude below the chronic risk LOC of 1.0. There are no chronic toxicity data available for estuarine/marine fish, so RQs cannot be calculated. However, based on the available freshwater fish data, no chronic effects to estuarine/marine fish are expected.

Acute Invertebrates

Because the most sensitive acute LC₅₀ or EC₅₀ for across the aquatic invertebrates (freshwater and estuarine/marine) is non-definitive (*i.e.* Quahog clam EC₅₀ > 960 µg ai/L), individual RQs are not presented. The RQ calculated with the highest peak TTR EEC of 24.5 µg ai/L and the non-definitive toxicity estimate for the clam is < 0.03 and would not exceed the LOC (0.05) for acute risk to listed species. While no sublethal effects were seen daphnids or grass shrimp, 40% abnormal larvae were reported in the clam study.

Chronic Invertebrates

Based on the maximum 21-day TTR EEC of 22.7 µg ai/L and a 21-day life cycle test with the cladoceran *Daphnia magna* NOAEC of 690 µg ai/L, the highest chronic RQ value is 0.03. The highest chronic RQ (0.03) for freshwater invertebrates from the proposed uses does not exceed the chronic risk LOC (1.0). No effects were reported in the daphnid life-cycle study. No data for chronic exposure to estuarine/marine species are available. Given the developmental effects observed in the acute Quahog clam study, there is uncertainty regarding the potential chronic effects of isoxaben on estuarine/marine invertebrates. As such, risk to estuarine/marine invertebrates cannot be precluded.

Plants

Frank effects on duckweed biomass were reported in all three studies available. Effects were roughly equivalent at both 7- and 14-days and for both formulated product and TGAI. The RQs (**Table 27**) based on the most sensitive of the available endpoints exceeds both the listed and nonlisted LOCs for the proposed uses.

Table 27. RQs for aquatic vascular plants from the proposed uses of isoxaben.

Proposed Use	Maximum TTR EEC µg ai/L	Nonlisted Species RQ EC ₅₀ = 10 µg ai/L	Listed Species RQ EC ₀₅ =6 µg ai/L
Grapes	14.2	1.4	2.4
Bearing nut trees	22.2	2.2	3.7

Appropriate endpoints for aquatic nonvascular plants are not available for this assessment; therefore risk cannot be quantitatively assessed and is presumed for these taxa.

Terrestrial Animals

Birds

Potential risks to birds are evaluated below. Risk estimates for birds are also used as surrogates for reptiles and terrestrial-phase amphibians.

Acute

No acute toxic effects were observed in either acute oral or subacute dietary studies with either mallard ducks or bobwhite quail. The acute and subacute endpoints for avian species are non-definitive (*i.e.* > highest limit dose and dietary concentration tested), therefore RQs are not presented. Although 'RQs' calculated with the highest dose tested in the acute oral study (2000 mg ai/kg-diet) would exceed the acute risk LOC (0.1) for listed species foraging on short grass and broadleaf plants/small insects the absence of any sign of toxicity among the birds tested makes the likelihood of actual risk low.

Chronic

Because a NOAEC is not available for birds, potential risk cannot be precluded. For the proposed new uses, a reference RQ calculated with the mallard chronic LOAEC (100 mg ai/kg-diet; **Table 28**) exceeds the chronic risk LOC (1.0) for birds by more than two-fold for species foraging on short grass. Avian RQs are surrogates for terrestrial-phase amphibians and reptiles.

Table 28. Upper Bound Chronic Avian Dietary Based Risk Quotients								
NOAEC (ppm)	EECs and RQs							
	Short Grass		Tall Grass		Broadleaf Plants/ Small Insects		Fruits/Pods/ Seeds/ Large Insects	
	EEC (ppm)	RQ	EEC (ppm)	RQ	EEC (ppm)	RQ	EEC (ppm)	RQ
100	240	>2.40*	110	>1.10*	135	>1.35*	15	>0.15

* bold indicates RQ exceeds chronic risk LOC (RQ≥1.0)

Mammals

Acute

Although the acute oral LD₅₀ for rats is nondefinitive and exceeds 10,000 mg ai/kg-bw, no mortality was observed in any of the treated animals; therefore RQs are not presented. Since isoxaben is considered practically nontoxic to mammals on an acute oral exposure basis and no sublethal effects were reported, risk is considered low.

Chronic

For the proposed new uses of isoxaben, dose-based chronic RQs exceed the chronic risk LOC of 1.0 (**Table 29**) for all size classes of mammals foraging on short grass, tall grass and broadleaf plant/small insects except large (1000 g) mammals foraging on tall grass. The RQ for small mammals (15 g) foraging on short grass exceeds the LOC by more than four-fold. All chronic dietary-based RQs are below the chronic risk LOC (**Table 30**).

Table 29. Upper Bound Kenaga, Chronic Mammalian Dose-Based Risk Quotients. EEC in ppm.											
Size Class (grams)	Adjusted NOAEL	EECs and RQs									
		Short Grass		Tall Grass		Broadleaf Plants/ Small Insects		Fruits/Pods/ Seeds/ Large Insects		Granivore	
		EEC	RQ	EEC	RQ	EEC	RQ	EEC	RQ	EEC	RQ
15	54.95	228.82	4.16^a	104.88	1.91	128.71	2.34	14.30	0.26	3.18	0.06
35	44.46	158.15	3.56	72.48	1.63	88.96	2.00	9.88	0.22	2.20	0.05
1000	19.23	36.67	1.91	16.81	0.87	20.63	1.07	2.29	0.12	0.51	0.03

^abold indicates RQ exceeds chronic risk LOC (RQ≥1.0)

Table 30. Upper Bound Kenaga, Chronic Mammalian Dietary Based Risk Quotients. EEC in ppm.								
NOAEC (ppm)	EECs and RQs							
	Short Grass		Tall Grass		Broadleaf Plants/ Small Insects		Fruits/Pods/ Seeds/ Large Insects	
	EEC	RQ	EEC	RQ	EEC	RQ	EEC	RQ
500	240.00	0.48	110.00	0.22	135.00	0.27	15.00	0.03

Size class not used for dietary risk quotients

Terrestrial Plants

The most sensitive monocot and dicot in the vegetative vigor and seedling emergence studies are used to derive the RQs in TerrPlant. In the seedling emergence study, no monocots were affected; however, only three species were included in the study, and they were all grasses. The most sensitive dicot was lettuce ($EC_{25} = 0.0095$ lbs ai/A). Rye grass is the most sensitive monocot in the vegetative vigor study ($EC_{25} = 0.014$ lbs ai/A) and pea is the most sensitive dicot, with an $EC_{25} > 0.056$ lbs ai/A (NOAEC = 0.056 lbs ai/A).

At the maximum seasonal application rate, RQs for both listed and non-listed dicots exceed the risk to terrestrial plant LOC for species exposed to runoff plus drift in adjacent upland and wetlands as well as drift alone (**Table 31**). The LOC for nonlisted plants is exceeded by more than 11-fold and exceeded for listed species by over 78-fold. The RQ for listed monocots exceeds the risk to terrestrial plant LOC by nearly 3-fold.

Table 31. Risk quotients for plants and endangered terrestrial plants for ground application of isoxaben at the maximum seasonal application rate (1.0 lbs ai/A).¹

Terrestrial Plant Group	Ground Spray		
	Adjacent uplands	Adjacent wetlands	Drift Only
Monocots	<0.1	0.12	0.71
Dicots	2.1¹	12	2.9
Listed Monocots	<0.1	0.12	1.0
Listed Dicots	14	79	7.1

¹Bold values denote an exceedance of the LOC ($RQ \geq 1.0$).

B. Risk Description

Isoxaben is characterized as a moderately persistent and mobile compound. Although primary routes of degradation include aqueous photolysis, aerobic aqueous metabolism and anaerobic aqueous metabolism, uncertainty regarding the potential toxicity of its residues increases estimated environmental concentrations. Consistent with the risk hypothesis, potential direct risk to both plant and animal species is possible from the proposed uses of isoxaben. Since risk to both aquatic and terrestrial plants is indicated, indirect effects to other taxa may occur.

Since the screening-level assessment uses few surrogate species to estimate risk to all aquatic and terrestrial organisms, it is possible that some species will be more sensitive than those tested.

Although the label is not explicit, the proposed uses are thought to be ground spray, to avoid injury to the proposed uses on bearing nut orchards and vineyards. This assessment however, does not evaluate aerial applications. If the proposed uses are intended to be applied aerially, the potential risk in this assessment will be under estimated. Risk in this document is calculated based on a single application of 1.0 lb ai/A, the total annual rate. The label allows for two applications at a lower rate, but additional modeling indicates that this scenario has no appreciable effect on the risk estimates.

Since the acute aquatic studies reported endpoints greater than the highest dose tested, RQs were not presented in the Risk Estimation section. However, there is uncertainty in the assessment. The studies did not attempt to increase the solubility of isoxaben in water beyond the reported limit of solubility of 1.0 mg ai/L. However, EECs were modeled using a total toxic residue approach (TTR) because degradate toxicity is unknown. Therefore, EECs are thought to be conservative and as such are likely to be protective for aquatic species.

No adverse effects were reported in either the acute or chronic toxicity studies of fish, therefore risk to fish is thought to be low. Although chronic exposure data are not available for estuarine/marine fish, the absence of effects in the available acute and chronic studies suggests effects are likely to be minimal. Also, since isoxaben has limited solubility in freshwater, its solubility in salt water is likely to be lower than that in freshwater and as a result make it less likely of causing adverse effects.

The sublethal effects reported in the acute exposure estuarine/marine clam study, *i.e.*, 40% abnormal larvae at the highest dose tested, suggest that isoxaben may have an effect on sensitive aquatic invertebrates. Abnormal larvae were defined in the study as number of normal larvae minus total number of larvae. Although the clam is an estuarine/marine species, it may represent freshwater mollusc species more sensitive to isoxaben than daphnids. 'RQs' calculated with highest test concentration are <0.02 and are below the acute risk LOC for listed aquatic invertebrates. Because of these sublethal effects in the acute clam study and in the absence of estuarine/marine chronic toxicity data, the potential for chronic effects cannot be precluded for estuarine/marine invertebrates.

There is potential for the proposed uses of isoxaben to adversely affect aquatic vascular plant based on frank effects seen in the submitted studies. The RQ for listed aquatic vascular species exceeds the LOC nearly four-fold for the bearing nut tree use, based on a relatively conservative scenario. In less vulnerable areas, the LOC exceedance will be less, proportional to the lower EEC.

Isoxaben is classified as practically nontoxic to birds on an acute oral exposure basis and no effects were reported at the highest dose tested. Given the absence of effects in the acute oral and subacute dietary studies, acute and subacute risks to birds are considered to be low.

The lack of a chronic NOAEC for avian species (mallards) means that potential risk from chronic exposure to birds is assumed. The RQ calculated with the LOAEC (100 mg ai/kg-diet) from the mallard duck study exceeds the chronic risk LOC of 1.0 by more than two-fold. No

effects were reported in the bobwhite quail reproduction study. There was a great deal of variability in the mallard duck study's controls and the study was marginally considered supplemental. Additionally, both studies lacked important growth endpoints.

While risk of mortality from acute exposure to isoxaben is expected to be low for mammals from the proposed uses of isoxaben, chronic risk is indicated. Although dietary-based RQs do not exceed the chronic risk LOC of 1.0, dose-based RQs exceed the LOC by over four-fold for small mammals foraging on short grass. The dose-based calculation takes into account that different-sized animals have to consume different amounts of food and that the food itself has differing nutritional value. Overall, small- and medium-sized mammals foraging on short grass, tall grass and broadleaf plants/small insects exceed the chronic risk LOC, as do large mammals foraging on short grass and broadleaf plants/small insects.

Given that risk from chronic exposure from the proposed uses of isoxaben is indicated for birds (and surrogates) and mammals, this route of exposure is a primary concern for these taxa. This assessment is based on a single application at the seasonal maximum application rate, but the label allows for up to two applications per season. Two applications of isoxaben at 0.5 lbs ai/A seven days apart does not appreciably change the risk estimates using the default foliar dissipation half-life. However, if the foliar dissipation half-life was, hypothetically, found to be 3 days, two applications of 0.5 lbs ai/A would roughly halve the chronic RQs. Reducing the application rate by one half also reduces the RQs by one half, but there are still exceedances.

There is uncertainty with respect to the species chosen for testing and their relative sensitivity compared to the range in potential sensitivities found in the ecosystem. Animal species selected for toxicity testing have generally been selected for their ease of husbandry in laboratory environments. It is possible that exposed species will be more or less sensitive to isoxaben than wild type species. The predominant direction of this uncertainty is unknown.

Although considered a preemergent herbicide, isoxaben may injure plants in later stages of development as well. Although the seedling emergence RQs, derived from runoff plus drift, are much higher than those for drift alone, derived using the vegetative vigor endpoint, RQs for dicots and listed monocots exceed the risk to terrestrial plant LOC. While grasses do not appear to be affected by isoxaben based on seedling emergence, some grasses appear to be susceptible to injury by isoxaben at later growth stages.

Although sublethal effects on growth are used to calculate RQs for nontarget plants, only ten crop species are used to estimate phytotoxicity to the entire terrestrial plant population, including trees, mosses, ferns, etc. It is uncertain how well the tested species represent the sensitivity distribution of the terrestrial plants as a whole that may come in contact with isoxaben. Additionally, since chronic and reproductive effects in particular are not evaluated at this time, the sublethal endpoints should be considered the best available indication of potentially critical effects to individual plant species and plant communities.

Runoff is a major factor in nontarget terrestrial plant exceedances based on TerrPlant. It is difficult to estimate how far from the application site adverse effects may occur. While RQs cannot be directly used to estimate the magnitude or likelihood of effects, it is true that lower application rates result in lower EECs. However, given the LOC for listed dicots would be

exceeded more than 79-fold at a single application of 1.0 lbs ai/A, even with a reduction in application rate the potential for nontarget plant effects would remain.

It is also important to consider that modeled runoff is only compared to endpoints from the seedling emergence study. The method of pesticide application in the guideline studies allows for analysis of effects to seedlings from both spray drift and runoff, but the vegetative vigor studies can only be analyzed for effects from spray drift. The potential for effects on older plants, such as those in the vegetative vigor study, from runoff through stem contact or root uptake remains an uncertainty and plant risk may be underestimated in this assessment.

There is uncertainty with respect to the species chosen for testing and their relative sensitivity compared to the range in potential plant sensitivities found in the ecosystem. Plants tested are crop plants, typically subjected to hundreds of years of human selection. It is possible that crop species will be more or less sensitive to isoxaben than native wild type species. The predominant direction of this uncertainty is unknown. The only monocots tested were grass species (Family: Poaceae), which are generally not sensitive to isoxaben at the application rates tested. Typically, onion (Family: Liliaceae) is the tested species representing the other monocot families (*e.g.* Orchidaceae, Smilacaceae). The lack of a second monocot family tested results in considerable uncertainty about the potential risk to non-grass species.

Effects to sensitive trees and other perennial species may occur that cannot be accounted for by current modeling and phytotoxicity studies. Changes in plant community composition may occur due to differences in species sensitivity. Such changes could lead to local reductions in biodiversity and influence animal species through changes in available habitat and preferred food sources.

The drift RQs in TerrPlant are based on estimated exposure roughly 200 feet from the application site, and exceed the LOC by over 7-fold for listed nontarget plants. The AgDRIFT model was used to refine the potential effect of isoxaben drift to nontarget plants. Ground applications at the total annual application rate, 1.0 lbs ai/A, were modeled for all of the species in the seedling emergence and vegetative vigor studies (**Table 32**). This table indicates the distance from the edge of the application area where the RQ for that endpoint falls below the risk to terrestrial plant LOCs. For the most sensitive species, lettuce, effects on seedling emergence may be seen at out to 249 ft from the application area, and beyond 997 ft for listed species. For vegetative vigor, effects may be seen out to 174 ft from the application area, and out to 554 ft for listed species.

Table 32 Distance (feet) from the edge of field where the RQ falls below the risk to terrestrial plant LOC for seedling emergence endpoints for ground application, based on AgDRIFT EECs.

Plant Species	Seedling Emergence		Vegetative vigor	
	Listed	Nonlisted	Listed	Nonlisted
Oat	3.3	<3.3	325	<3.3
Ryegrass	3.3	<3.3	554	174

Plant Species	Seedling Emergence		Vegetative vigor	
	Listed	Nonlisted	Listed	Nonlisted
Wheat	3.3	<3.3	3.3	<3.3
Oilseed rape	125	92	6.6	>3.3
Pea	46	10	46	<46
Cucumber	3.3	<3.3	92	30
Carrot	177	49	554	<3.3
Lettuce	>997	249	46	<3.3
Tomato	331	154	3.3	<3.3
Sugarbeet	46	36	6.6	3.3

The distance estimates are derived using EFED's AgDRIFT default values, which include the use of a high-boom (50 in height) ground application and ASABE droplet size spectrum 'very fine to fine'. However, herbicides are often applied with larger droplets sizes and the proposed use sites, bearing nut orchards and vineyards, together with the use of isoxaben as a preemergent herbicide, suggest these may be highly conservative assumptions. AgDRIFT modeling was also conducted using low boom (20 in height) and ASAE droplet size spectrum 'fine to medium/coarse'. Using these parameters, the longest distance to an exposure value equal to the vegetative vigor NOAEC is 144 ft and to the seedling emergence NOAEC is 430 ft. While this is still a considerable distance from the edge of the application area, it is appreciably less than the undefined >997 ft distance predicted using the default parameters.

Adding addition uncertainty to the drift estimates is the assumption of the model of a bare ground fetch for the wind to traverse before carrying the droplets out to the predicted distance. While this is an uncertainty regardless of the application of the model, the assumption is less likely to be true for many of the bearing nut orchards. Most of these orchards feature a fairly dense stand of trees with a relatively closed canopy, which would presumably alter the flow of air across the application site. Therefore, even the estimate of 430 ft may be very conservative for many (but not all) of the proposed application sites. Large tree orchards (*e.g.* pecans) and vineyards are less likely to have the degree of air flow interruption as the smaller tree orchards (*e.g.* apples).

Because isoxaben is moderately persistent and moderately mobile, contamination of ground water used as irrigation was considered as a possible route of exposure to terrestrial plants. The highest estimated groundwater concentration value from SciGrow (14.5 ppb) applied in one inch of water on an acre of land corresponds to an application rate of 0.0032 lbs ai/A, roughly one third of the most sensitive terrestrial plant endpoint, lettuce seedling emergence (**Appendix A**). Therefore, this route of exposure is not expected to pose a significant risk to nontarget terrestrial plants. However, should this estimated ground water concentration result in exposure to aquatic plants via ground water recharge, the aquatic plants may be affected.

No incidents involving animals have been reported to the Agency's EIIS database, and no incidents involving birds are reported in the AIMS database. However, the absence of reported incidents should not be construed as the absence of incidents. Incident reports for non-target organisms typically provide information only on mortality events and plant damage. Sublethal effects in organisms such as abnormal behavior, reduced growth and/or impaired reproduction are rarely reported, except for phytotoxic effects in terrestrial plants. EPA's changes in the registrant reporting requirements for incidents in 1998 may account for lack of reported incidents. Registrants are now only required to submit detailed information on 'major' fish, wildlife, and plant incidents. Minor fish, wildlife, and plant incidents, as well as all other non-target incidents, are generally reported aggregately and are not included in EIIS. In addition, there have been changes in State monitoring efforts due to a lack of resources. However, the incident data discussed earlier suggest that, at least for plants, exposure pathways for isoxaben are complete and that exposure levels are sufficient to result in field-observable effects.

As required under FFDCA section 408(p), EPA has developed the Endocrine Disruptor Screening Program (EDSP) to determine whether certain substances (including pesticide active and other ingredients) may have an effect in humans or wildlife similar to an effect produced by a "naturally occurring estrogen, or other such endocrine effects as the Administrator may designate." The EDSP employs a two-tiered approach to making the statutorily required determinations. Tier 1 consists of a battery of 11 screening assays to identify the potential of a chemical substance to interact with the estrogen, androgen, or thyroid (E, A, or T) hormonal systems. Chemicals that go through Tier 1 screening and are found to have the potential to interact with E, A, or T hormonal systems will proceed to the next stage of the EDSP where EPA will determine which, if any, of the Tier 2 tests are necessary based on the available data. Tier 2 testing is designed to identify any adverse endocrine related effects caused by the substance, and establish a dose-response relationship between the dose and the E, A, or T effect.

Between October 2009 and February 2010, EPA issued test orders/data call-ins for the first group of 67 chemicals, which contains 58 pesticide active ingredients and 9 inert ingredients. This list of chemicals was selected based on the potential for human exposure through pathways such as food and water, residential activity, and certain post-application agricultural scenarios. This list should not be construed as a list of known or likely endocrine disruptors.

Isoxaben is not among the group of 58 pesticide active ingredients on the initial list to be screened under the EDSP. Under FFDCA sec. 408(p) the Agency must screen all pesticide chemicals. Accordingly, EPA anticipates issuing future EDSP test orders/data call-ins for all pesticide active ingredients.

For further information on the status of the EDSP, the policies and procedures, the list of 67 chemicals, the test guidelines and the Tier 1 screening battery, please visit our website: <http://www.epa.gov/endo/>.

C. Uncertainties and Data Gaps

The aerobic soil metabolism study upon which this assessment is based was conducted on four foreign soils. The study was classified as supplemental, as all of the soils were foreign and

it was unclear if they were comparable to soils in the United States, adding to the uncertainty of how quickly isoxaben degrades in an aerobic soil environment. A study conducted on soils from the United States would provide better clarity on the degradation of isoxaben and confirm the results obtain herein. However, using a TTR modeling approach and employing the 90th percentile of the upper confidence bound on the mean of the five TTR half-life values reduces the level of uncertainty in the conservative nature of the EEC estimates.

Several studies were submitted to fulfill the adsorption/desorption data requirement. MRID 00164645 was classified as not acceptable for a number of reasons, primarily because the leaching was not continuous and done in a timely manner, a complete material balance was not provided, and the soil samples were not analyzed for residues. MRID 00132124 was classified as unacceptable for a number of reasons, primarily because isoxaben and its transformation products were not identified after aging, prior to leaching, or after leaching. MRID 41106303 was reviewed in 1990 and classified as acceptable, provided the “toxicology branch determines that degradates other than 201469 (hydroxyisoxaben) are not of toxicological concern.” For the drinking water and ecological risk assessments, the degradates hydroxyisoxaben, dimethoxybenzamide, methoxyphenylpyrimidinol, and amino ethyl methyl (AEM) hexenoylisoxaben were not expected to be more toxic to humans than the parent compound, but data were not available to exclude them as residues of concern. As such, mobility data on isoxaben and its degradates of concern would provide better clarity on the mobility of isoxaben and its degradates and confirm the results obtain herein. Alternatively, toxicity data which precludes the degradates hydroxyisoxaben, dimethoxybenzamide, methoxyphenylpyrimidinol, and AEM hexenoylisoxaben as residues of concern would eliminate the need for mobility data for the isoxaben degradates and a new mobility study.

The bioconcentration study for isoxaben residues accumulated in bluegill was classified as supplemental because isoxaben residues were incompletely characterized and residues in the whole fish tissue were not determined experimentally. While the relatively low K_{ow} and these bioconcentration factors in fish suggest that isoxaben is not expected to accumulate in aquatic or terrestrial food chains, an acceptable study would reduce uncertainty with regards to aquatic exposure effects.

There is also uncertainty associated with the ability of the aquatic exposure modeling to simulate aquatic exposures as well as in the selection of input parameters. In this regard, one of the potentially important parameters that can impact concentration estimates is the selection of appropriate application dates. Although the pesticide application dates were selected to be most appropriate with considerations for application recommendations, model simulated cropping dates, and label restrictions, variability nevertheless results because the time span that a pesticide may likely be applied may be large and the actual application dates are unknown. Such variability is caused by the temporal proximity of a pesticide application to rain events. As with all model estimates, the values presented here should not be viewed as precise estimates.

V. Federally Threatened and Endangered (Listed) Species

The screening-level risk assessment indicates that risk to birds and mammals from chronic exposure is possible from the proposed uses of isoxaben. Chronic risk to estuarine/marine invertebrates is presumed due to lack of data and sublethal effects in an acute study. Risk to aquatic vascular and terrestrial plants is indicated. In addition to listed plant species risk, the

Agency considers the LOC exceedances as indicative of a potential for secondary (indirect) adverse effects to those listed species that rely either on a specific plant species (plant species obligate) or multiple plant species (plant dependant) for some important aspect of their life cycle (indirect effects). Indirect effects may include general habitat modification, host plant loss, and food supply disruption. Further analysis regarding the overlap of individual species with each use site is required prior to determining the likelihood of potential impact to listed species. Such a refinement is outlined in the following sections.

a. Action Area

For listed species assessment purposes, the action area is considered to be the area affected directly or indirectly by the Federal action and not merely the immediate area involved in the action. At the initial screening level, the risk assessment considers broadly described taxonomic groups and so conservatively assumes that listed species within those broad groups are co-located with the pesticide treatment area. This means that terrestrial plants and wildlife are assumed to be located on or adjacent to the treated site and aquatic organisms are assumed to be located in a surface water body adjacent to the treated site. The assessment also assumes that the listed species are located within an assumed area, which has the relatively highest potential exposure to the pesticide, and that exposures are likely to decrease with distance from the treatment area.

If the assumptions associated with the screening-level action area result in RQs that are below the listed species LOCs, a "no effect" determination conclusion could be made with respect to listed species in that taxa, and no further refinement of the action area is necessary. Furthermore, RQs below the listed species LOCs for a given taxonomic group indicate no concern for indirect effects upon listed species that depend upon the taxonomic group covered by the RQ as a resource. However, in situations where the screening assumptions lead to RQs in excess of the listed species LOCs for a given taxonomic group, a "may affect" designation cannot be precluded and may be associated with direct effects on listed species belonging to that taxonomic group or may extend to indirect effects upon listed species that depend upon that taxonomic group as a resource. In such cases, additional information on the biology of listed species, the locations of these species, and the locations of use sites need to be considered along with available information on the fate and transport properties of the pesticide to determine the extent to which screening assumptions regarding an action area apply to a particular listed organism. These subsequent refinement steps could delineate how this information would impact the action area for a particular listed organism and may potentially include areas of exposure that are downwind and downstream of the pesticide use site.

b. Taxonomic Groups Potentially at Risk

The RQs calculated based on the ratio of EECs to toxicity endpoints exceed the LOC in this case the chronic exposure endpoints for bird and mammals and the NOAEC values from aquatic and terrestrial plant toxicity studies. Should estimated exposure levels occur in proximity to listed resources, direct risk to listed birds, terrestrial-phase amphibians, reptiles, mammals and plant species and indirect effects on animal species (aquatic and terrestrial; **Table 34**) are possible. **Appendix C** provides a count-by-state listing of species for each taxon that may be affected by this action. This screening-level assessment is based on the initial assumption that listed species within the taxonomic groups of concern are actually present in areas for which the estimated exposure levels used for RQ calculation can be expected to occur. A specific determination for any RQ in excess of listed species LOCs cannot be made until a determination of the co-occurrence of the listed species with the action area has been determined. This was not done for this assessment.

Table 33. Potential Listed Species Risks Associated with Direct or Indirect Effects Due to the Proposed Application of Isoxaben on Grapes and Bearing Nut Trees.

Listed Taxon	Direct Effects	Indirect Effects
Terrestrial and semi-aquatic plants - monocots	Yes	Yes ¹
Terrestrial and semi-aquatic plants - dicots	Yes	Yes ¹
Birds	Yes	Yes ¹
Terrestrial-phase amphibians	Yes	Yes ¹
Terrestrial invertebrates	Yes	Yes ¹
Reptiles	Yes	Yes ¹
Mammals	Yes	Yes ¹
Aquatic vascular plants	Yes	Yes ¹
Aquatic nonvascular plants	No	Yes ¹
Freshwater fish	No	Yes ¹
Aquatic-phase amphibians	No	Yes ¹
Freshwater invertebrates	No	Yes ¹
Mollusks	No	Yes ¹

Listed Taxon	Direct Effects	Indirect Effects
Marine/estuarine fish	No	Yes ¹
Marine/estuarine crustaceans	Yes	Yes ¹

¹Nonlisted LOC exceeded for terrestrial plants, therefore there is potential for adverse effects to those species that rely either on a specific plant species or multiple plant species. Plant indirect effects may include general habitat modification, host plant loss, and food supply disruption.

c. Indirect Effects Analysis

Because terrestrial plant RQs are above risk to non-endangered species LOCs, there is a potential for adverse effects to those listed species that are plant species obligates or plant dependant for some important aspect of their life cycle. The extent to that the new uses of isoxaben will indirectly affect listed animal species will require identification of listed species that co-occur in areas of isoxaben use and an evaluation of critical habit as described below. Because of the potential extent of the use of isoxaben, EFED cannot preclude the possibility of a ‘likely to adversely affect’ designation for listed species based on this assessment.

d. Critical Habitat

The screening-level risk assessment has identified potential concerns for direct and indirect effects on listed species associated with action areas where isoxaben is used. In light of the potential for effects on listed species, the next step for EPA and the Services is to identify which listed species and critical habitat are potentially implicated. Analytically, the identification of such species and critical habitat can occur in either of two ways. First, the agencies could determine whether the action area overlaps critical habitat or the occupied range of each listed species. If so, EPA would examine the potential impact of the use of isoxaben on listed species and whether impacts on non-endangered species would affect the listed species indirectly or directly affect a constituent element of the critical habitat. Then EPA would determine whether use of the pesticide overlaps the critical habitat or the occupied range of those listed species. At present, the information reviewed by EPA does not permit use of either analytical approach to make a definitive identification of species that are potentially impacted indirectly or critical habitats that are potentially impacted directly by the use of the pesticide. EPA and the Services will work together to conduct the necessary analysis.

e. Co-occurrence Analysis

The goal of the analysis for co-location is to determine whether sites of pesticide use are geographically associated with known locations of listed species. At the screening level, this analysis is accomplished using the Agency’s LOCATES (v. 2.10.3) database. The database uses location information for listed species at the county level and compares it to agricultural census data for crop production at the same county level of resolution. The database contains Federally-listed species that are located within states known to produce the crop upon which the pesticide will be used. Because the screening-level assessment considers **both** direct and indirect effects across generic taxonomic groupings, it is not possible to exclude any taxonomic group from a

LOCATES database query for a screening-level risk assessment. Therefore, a ‘may affect’ designation cannot be precluded for listed animals based on this assessment.

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MRID 47140003

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MRID 47140004

Huhtanen, K. and L. Heim. 2003. Aerobic soil degradation of isoxaben. Unpublished study performed by ABC Laboratories, Inc., Columbia, Missouri; sponsored and submitted by Dow AgroSciences LLC, Indianapolis, Indiana. Lab Study ID.: 46879, Dow Study No. 010043. Final report issued May 12, 2003.

MRID 47428403

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MRID: 130273

Citation: Uniroyal Chemical (1983) Bee Adult Toxicity Dusting Test Summary. (Compilation; unpublished study received Jun 22, 1983 under 400-EX-62; CDL:250574-A)

MRID: 132140

Citation: Elanco Products Co. (1982) The Toxicity of EL-107 (Compound 121607) in Short-term Exposure Studies with Representative Wildlife Species: ?Summary of Toxicity Data|. (Compilation; unpublished study received Jun 10, 1983 under 1471-EX-85; CDL:250793-F)

MRID: 132141

Citation: Kehr, C.; Lake, S.; Brannon, D.; et al. (1983) The Toxicity of EL-107 (Compound 121607) to Bobwhite in a 14-day Acute Oral Study: Study A00682. (Unpublished study received Jun 10, 1983 under 1471-EX-85; submitted by Elanco Products Co., Div. of Eli Lilly and Co., Indianapolis, IN; CDL:250793-G)

MRID: 132142

Citation: Kehr, C.; Lake, S.; Bronnon, D.; et al. (1983) The Toxicity of EL- 107 (Compound 121607) to Bobwhite in a 5-day Dietary Study: Study A01082. (Unpublished study received Jun 10, 1983 under 1471-EX-85; submitted by Elanco Products Co., Div. of Eli Lilly and Co., Indianapolis, IN; CDL:250793-H)

MRID: 132143

Citation: Kehr, C.; Lake, S.; Brannon, D.; et al. (1983) The Toxicity of EL- 107 (Compound 121607) to Mallards in a 5-day Dietary Study: Study A00882. (Unpublished study received Jun 10, 1983 under 1471-EX-85; submitted by Elanco Products Co., Div. of Eli Lilly and Co., Indianapolis, IN; CDL:250793-I)

MRID: 132144

Citation: Francis, P.; Grothe, D.; Lake, S.; et al. (1983) The Acute Toxicity of EL-107 (Compound 121607) to ... in a Static Test System: Study C02182. (Unpublished study received Jun 10, 1983 under 1471-EX-85; submitted by Elanco Products Co., Div. of Eli Lilly and Co., Indianapolis, IN; CDL:250793-J)

MRID: 132145

Citation: Grothe, D.; Francis, P.; Lake, S.; et al. (1983) The Acute Toxicity of EL-107 (Compound 121607) to Bluegill ... in a Static Test System: Study F07382. (Unpublished study received Jun 10, 1983 under 1471-EX-85; submitted by Elanco Products Co., Div. of Eli Lilly and Co., Indianapolis, IN; CDL:250793-K)

MRID: 132146

Citation: Grothe, D.; Francis, P.; Lake, S.; et al. (1983) The Acute Toxicity of EL-107 (Compound 121607) to Rainbow Trout ... in a Static Test System: Study F07482. (Unpublished study received Jun 10, 1983 under 1471-EX-85; submitted by Elanco Products Co., Div. of Eli Lilly and Co., Indianapolis, IN; CDL:250793-L)

MRID: 137844

Citation: Francis, P.; Grothe, D.; Lake, S.; et al. (1984) The Acute Toxicity of EL-107 (Compound 121607) to the Japanese Carp (Cyprinus carpio) in a Static Test System: Study F10383. (Unpublished study received Apr 5, 1984 under 1471-EX-85; submitted by Elanco Prod- ucts Co., Div. of Eli Lilly and Co., Indianapolis, IN; CDL: 252915-A)

MRID: 137845

Citation: Francis, P.; Grothe, D.; Lake, S.; et al. (1984) The Toxicity of EL-107 to *Daphnia magna* in a 21-Day Static-renewal Life Cycle: Study CO3683. (Unpublished study received Apr 5, 1984 under 1471-EX-85; submitted by Elanco Products Co., Div. of Eli Lilly and Co., Indianapolis, IN; CDL:252915-B)

MRID: 137847

Citation: Meyerhoff, R.; Sauter, S.; Lake, S.; et al. (1983) The Toxicity of EL-107 in Water to Rainbow Trout (*Salmo gairdneri*) in a 66- day Early Life-stage Study: Study F00383. (Unpublished study received Apr 5, 1984 under 1471-EX-85; submitted by Elanco Products Co., Div. of Eli Lilly and Co., Indianapolis, IN; CDL: 252915-D)

MRID: 137848

Citation: Sauter, S.; Meyerhoff, R.; Lake, S.; et al. (1983) The Toxicity of EL-107 in Water to Fathead Minnows (*Pimephales promelas*) in a 33-day Early Life-stage Study: Study F08183. (Unpublished study received Apr 5, 1984 under 1471-EX-85; submitted by Elanco Products Co., Div. of Eli Lilly and Co., Indianapolis, IN; CDL: 252915-E)

MRID: 40531302

Citation: Surprenant, D.; Dionne, E. (1987) Acute Toxicity of Isoxaben to Embryo-larval Stages of the Quahog Clam (*Mercenaria mercenaria*): Study #1982.0787.6100.514. Unpublished study prepared by Springborn Life Sciences, Inc. 25 p.

MRID: 40531303

Citation: Gries, C.; Grothe, D.; Mohr, R. (1987) Acute Toxicity of Isoxaben to the Grass Shrimp (*Palaemonetes pugio*) in a Static Test System: Proj. ID C01387. Unpublished study prepared by Lilly Research Laboratories. 33 p.

MRID: 40531304

Citation: Gries, C.; Grothe, D.; Seacat, J. (1987) Acute Toxicity of Isoxaben to the Sheepshead minnow (*Cyprinodon variegatus*) in a Static Test System: Proj. ID. FO1587. Unpublished study prepared by Lilly Research Laboratories. 36 p.

MRID: 47140011

Citation: Billington, R. (1996) Isoxaben (EL-107): Toxicology Summary. Project Number: RB103196. Unpublished study prepared by Dowelanco Ltd. 29 p.

MRID: 47428401

Citation: Hoberg, J. (2002) Isoxaben TGAI- Toxicity to Duckweed, *Lemna gibba*. Project Number: 12550/6159, 011193. Unpublished study prepared by Springborn Laboratories Inc. 62 p.

MRID: 47428404

Citation: Eley, R. (2004) Evaluation of the Phytotoxicity of Flexidor (Isoxaben, 500 SC) Seedling Emergence and Seedling Growth Test- Northern Europe, 2004. Project Number: ACE/04/077, 10000134, EA04T4A003. Unpublished study prepared by AgroChemex Ltd. 45 p.

MRID: 47428405

Citation: Rockliff, C. (2006) Evaluation of the Phytotoxicity of Flexidor (Isoxaben, 500g ai/l, SC) GLP Vegetative Vigour Test Terrestrial Non Target Plant Study. Project Number: STC/06/E309, GHE/P/11418, 10000134. Unpublished study prepared by Stockbridge Technology Centre Ltd. 116 p.

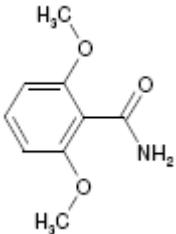
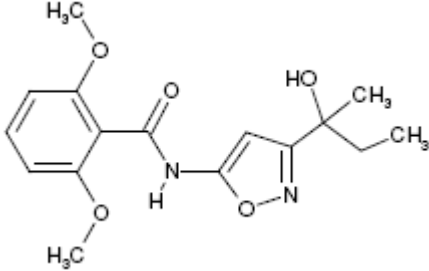
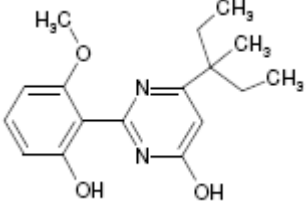
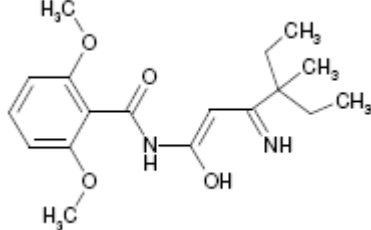
APPENDIX A. Calculations for Irrigation Exposure

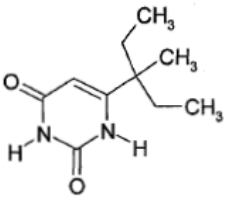
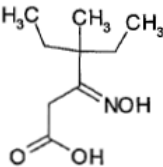
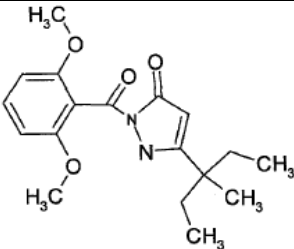
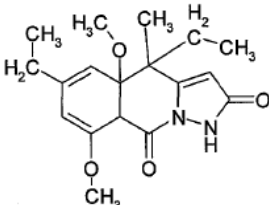
To estimate exposure to plants when ground water contaminated by isoxaben is applied to crops, the following method was used.

Assume a field is irrigated with one inch of water containing 14.5 µg/L isoxaben (concentration estimate from SCI-GROW).

This results in 6,272,640 cubic inches of water on each acre of the field (one acre = 6,272,640 in²), or 1.0×10^5 L/acre of water ($6,272,640 \text{ in}^3 \div 61 \text{ in}^3/\text{L} = 1.0 \times 10^5 \text{ L}$). Therefore, 1.45×10^6 µg isoxaben are applied to each acre of the field ($14.5 \text{ µg/L} \times 1.0 \times 10^5 \text{ L} = 1.45 \times 10^6 \text{ µg}$), which is equivalent to an application rate of 3.2×10^{-3} lbs isoxaben/acre ($1.45 \times 10^6 \text{ µg} = 3.2 \times 10^{-3} \text{ lbs}$).

Appendix B. Chemical Names and Structures of isoxaben and degradation products detected in submitted environmental fate studies

Name(s)	Structure	Occurrence	Fate Properties ¹
Dimethoxy benzamide 2,6-Dimethoxybenzamide		Aqueous photolysis (major) Aerobic Aquatic Metabolism (major) Anaerobic Aquatic Metabolism (major) Soil Photolysis (minor)	VP = 1.6×10^{-5} torr Sol = 8.4×10^4 mg/L Log K _{OW} = -0.22 K _{OC} = 4.9 – 10 mL/g
Hydroxy isoxaben Pseudonyms- AA-045 N-[3-(1-hydroxyl-1-methylpropyl)-5-isoxazolyl]-2,6-dimethoxy-benzamide		Aerobic Soil Metabolism (major) Anaerobic Soil Metabolism (major) Aerobic Aquatic Metabolism (minor) Terrestrial Field Dissipation	VP = 9.8×10^{-12} torr Sol = 462 mg/L Log K _{OW} = 1.53 K _{OC} = 17 – 31 mL/g K _{OC} = 21 – 73 (MRID 4110603)
Methoxyphenol pyrimidinol 6-(1-ethyl-1-methylpropyl)-2-(2-hydroxy-6-methoxyphenyl)-4-pyrimidinol		Anaerobic Aquatic Metabolism (major) Aerobic Aquatic Metabolism (minor)	VP = 4×10^{-10} torr Sol = 41.2 mg/L Log K _{OW} = 3.56 K _{OC} = 4800 – 38,000 mL/g
AEM hexenoyl isoxaben N-[3-amino-4-ethyl-4-methyl-2-hexenoyl]-2,6-dimethoxybenzamide		Anaerobic Aquatic Metabolism (major) Aerobic Aquatic Metabolism (minor)	VP = 3.1×10^{-13} torr Sol = 265 mg/L Log K _{OW} = 1.71 K _{OC} = 21 - 102 mL/g

Name(s)	Structure	Occurrence	Fate Properties ¹
Unk3 ² 6-(1-ethyl-1-methylpropyl)pyrimidine-2,4(1H,3H)-dione		Aqueous Photolysis (major)	VP = 5.6×10^{-8} torr Sol = 853 mg/L Log K _{OW} = 2.0 K _{OC} = 80 – 113 mL/g
Unk3i ² 4-ethyl-3-(hydroxyimino)-4-methylhexanoic acid		Aqueous Photolysis (major)	VP = 3.8×10^{-6} torr Sol = 698 mg/L Log K _{OW} = 2.8 K _{OC} = 51 – 126 mL/g
Unk5a ² 2-(2,6-dimethoxybenzoyl)-5-(1-ethyl-1-methylpropyl)1,2-dihydro-3H-pyrazol-3-one		Aqueous Photolysis (major)	VP = 2.0×10^{-10} torr Sol = 29 mg/L Log K _{OW} = 2.85 K _{OC} = 222 – 228 mL/g
Unk5b ² 4,6-diethyl-4a,8-dimethoxy-4-methyl-4a,8a-dihydropyrazolo[1,5-b]isoquinoline-2,9(1H,4H)-dione		Aqueous Photolysis (major)	VP = 1.3×10^{-10} torr Sol = 2221 mg/L Log K _{OW} = 0.65 K _{OC} = 12 – 331 mL/g

1. Fate properties for degradates estimated using EPISuite 4.0.

2. Names and structures presented in table were proposed by the study authors based on Fourier transform infrared spectroscopy (FTIR) and nuclear magnetic resonance (NMR) identification of structural and functional group changes.

Appendix C. LOCATES Listing of Federally Listed Species

Species Listing by State with Use Criteria

No species were excluded

Minimum of 1 Acre.

All Medium Types Reported

Mammal, Marine mml, Bird, Amphibian, Reptile, Fish, Crustacean, Bivalve, Gastropod, Arachnid, Insect, Dicot, Monocot, Ferns, Conf/cycds, Coral, Lichen
almonds, hazelnuts (filberts), macadamia nuts, nuts - other, pecans, pistachios, walnuts, english, grapes

Alabama	(86) species:		<u>Taxa</u>	<u>Critical Habitat</u>
Salamander, Flatwoods		Threatened	Amphibian	No
(<i>Ambystoma cingulatum</i>)			Freshwater, Vernal pool, Terrestrial	
Salamander, Red Hills		Threatened	Amphibian	No
(<i>Phaeognathus hubrichti</i>)			Freshwater, Terrestrial	
Plover, Piping		Endangered	Bird	Yes
(<i>Charadrius melodus</i>)			Terrestrial	
Stork, Wood		Endangered	Bird	No
(<i>Mycteria americana</i>)			Terrestrial	
Woodpecker, Red-cockaded		Endangered	Bird	No
(<i>Picoides borealis</i>)			Terrestrial	
Combshell, Southern (=Penitent mussel)		Endangered	Bivalve	No
(<i>Epioblasma penita</i>)			Freshwater	
Combshell, Upland		Endangered	Bivalve	Yes
(<i>Epioblasma metastrata</i>)			Freshwater	
Kidneyshell, Triangular		Endangered	Bivalve	Yes
(<i>Ptychobranhus greenii</i>)			Freshwater	
Mucket, Orangenacre		Threatened	Bivalve	Yes
(<i>Lampsilis perovalis</i>)			Freshwater	
Mucket, Pink (Pearlymussel)		Endangered	Bivalve	No
(<i>Lampsilis abrupta</i>)			Freshwater	
Mussel, Acornshell Southern		Endangered	Bivalve	Yes
(<i>Epioblasma othcaloogensis</i>)			Freshwater	
Mussel, Alabama Moccasinshell		Threatened	Bivalve	Yes
(<i>Medionidus acutissimus</i>)			Freshwater	
Mussel, Coosa Moccasinshell		Endangered	Bivalve	Yes
(<i>Medionidus parvulus</i>)			Freshwater	
Mussel, Cumberland Combshell		Endangered	Bivalve	Yes
(<i>Epioblasma brevidens</i>)			Freshwater	
Mussel, Dark Pigtoe		Endangered	Bivalve	Yes
(<i>Pleurobema furvum</i>)			Freshwater	
Mussel, Fine-lined Pocketbook		Threatened	Bivalve	Yes
(<i>Lampsilis altilis</i>)			Freshwater	

Alabama

(86) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Mussel, Fine-rayed Pigtoe (<i>Fusconaia cuneolus</i>)	Endangered	Bivalve Freshwater	No
Mussel, Flat Pigtoe (=Marshall's Mussel) (<i>Pleurobema marshalli</i>)	Endangered	Bivalve Freshwater	No
Mussel, Heavy Pigtoe (=Judge Tait's Mussel) (<i>Pleurobema taitianum</i>)	Endangered	Bivalve Freshwater	No
Mussel, Heelsplitter Inflated (<i>Potamilus inflatus</i>)	Threatened	Bivalve Freshwater	No
Mussel, Ovale Clubshell (<i>Pleurobema perovatam</i>)	Endangered	Bivalve Freshwater	Yes
Mussel, Ring Pink (=Golf Stick Pearly) (<i>Obovaria retusa</i>)	Endangered	Bivalve Freshwater	No
Mussel, Rough Pigtoe (<i>Pleurobema plenum</i>)	Endangered	Bivalve Freshwater	No
Mussel, Shiny Pigtoe (<i>Fusconaia cor</i>)	Endangered	Bivalve Freshwater	No
Mussel, Shiny-rayed Pocketbook (<i>Lampsilis subangulata</i>)	Endangered	Bivalve Freshwater	No
Mussel, Southern Clubshell (<i>Pleurobema decisum</i>)	Endangered	Bivalve Freshwater	Yes
Mussel, Southern Pigtoe (<i>Pleurobema georgianum</i>)	Endangered	Bivalve Freshwater	Yes
Pearlymussel, Alabama Lamp (<i>Lampsilis virescens</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Cracking (<i>Hemistena lata</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Cumberland Monkeyface (<i>Quadrula intermedia</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Orange-footed (<i>Plethobasus cooperianus</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Pale Lilliput (<i>Toxolasma cylindrellus</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Turgid-blossom (<i>Epioblasma turgidula</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, White Wartyback (<i>Plethobasus cicatricosus</i>)	Endangered	Bivalve Freshwater	No
Stirrupshell (<i>Quadrula stapes</i>)	Endangered	Bivalve Freshwater	No
Shrimp, Alabama Cave (<i>Palaemonias alabamiae</i>)	Endangered	Crustacean Freshwater	No
Amphianthus, Little (<i>Amphianthus pusillus</i>)	Threatened	Dicot Freshwater	No

Alabama

(86) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Barbara Buttons, Mohr's (<i>Marshallia mohrii</i>)	Threatened	Dicot Terrestrial	No
Bladderpod, Lyrate (<i>Lesquerella lyrata</i>)	Threatened	Dicot Terrestrial	No
Clover, Leafy Prairie (<i>Dalea foliosa</i>)	Endangered	Dicot Terrestrial	No
Harperella (<i>Ptilimnium nodosum</i>)	Endangered	Dicot Freshwater	No
Leather-flower, Alabama (<i>Clematis socialis</i>)	Endangered	Dicot Terrestrial	No
Leather-flower, Morefield's (<i>Clematis morefieldii</i>)	Endangered	Dicot Terrestrial	No
Pitcher-plant, Alabama Canebrake (<i>Sarracenia rubra alabamensis</i>)	Endangered	Dicot Freshwater, Terrestrial	No
Pitcher-plant, Green (<i>Sarracenia oreophila</i>)	Endangered	Dicot Terrestrial, Freshwater	No
Potato-bean, Price's (<i>Apios priceana</i>)	Threatened	Dicot Terrestrial	No
Fern, Alabama Streak-sorus (<i>Thelypteris pilosa</i> var. <i>alabamensis</i>)	Threatened	Ferns Terrestrial	No
Fern, American hart's-tongue (<i>Asplenium scolopendrium</i> var. <i>americanum</i>)	Threatened	Ferns Terrestrial	No
Quillwort, Louisiana (<i>Isoetes louisianensis</i>)	Endangered	Ferns Freshwater, Terrestrial	No
Cavefish, Alabama (<i>Speoplatyrhinus poulsoni</i>)	Endangered	Fish Freshwater	Yes
Chub, Spottfin (<i>Erimonax monachus</i>)	Threatened	Fish Freshwater	Yes
Darter, Boulder (<i>Etheostoma wapiti</i>)	Endangered	Fish Freshwater	No
Darter, Goldline (<i>Percina aurolineata</i>)	Threatened	Fish Freshwater	No
Darter, Slackwater (<i>Etheostoma boschungii</i>)	Threatened	Fish Freshwater	Yes
Darter, Snail (<i>Percina tanasi</i>)	Threatened	Fish Freshwater	No
Darter, Vermilion (<i>Etheostoma chermocki</i>)	Endangered	Fish Freshwater	No
Darter, Watercress (<i>Etheostoma nuchale</i>)	Endangered	Fish Freshwater	No
Madtom, Yellowfin (<i>Noturus flavipinnis</i>)	Threatened	Fish Freshwater	Yes

Alabama

(86) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Sculpin, Pygmy	Threatened	Fish	No
(<i>Cottus paulus</i> (=pygmaeus))		Freshwater	
Shiner, Blue	Threatened	Fish	No
(<i>Cyprinella caerulea</i>)		Freshwater	
Shiner, Cahaba	Endangered	Fish	No
(<i>Notropis cahabae</i>)		Freshwater	
Shiner, Palezone	Endangered	Fish	No
(<i>Notropis albizonatus</i>)		Freshwater	
Sturgeon, Alabama	Endangered	Fish	No
(<i>Scaphirhynchus suttkusi</i>)		Freshwater	
Sturgeon, Gulf	Threatened	Fish	Yes
(<i>Acipenser oxyrinchus desotoi</i>)		Saltwater, Freshwater	
Campeloma, Slender	Endangered	Gastropod	No
(<i>Campeloma decampi</i>)		Freshwater	
Elimia, Lacy	Threatened	Gastropod	No
(<i>Elimia crenatella</i>)		Freshwater	
Pebblesnail, Flat	Endangered	Gastropod	No
(<i>Lepyrium showalteri</i>)		Freshwater	
Riversnail, Anthony's	Endangered	Gastropod	No
(<i>Athearnia anthonyi</i>)		Freshwater	
Rocksnail, Painted	Threatened	Gastropod	No
(<i>Leptoxis taeniata</i>)		Freshwater	
Rocksnail, Plicate	Endangered	Gastropod	No
(<i>Leptoxis plicata</i>)		Freshwater	
Rocksnail, Round	Threatened	Gastropod	No
(<i>Leptoxis ampla</i>)		Freshwater	
Snail, Armored	Endangered	Gastropod	No
(<i>Pyrgulopsis</i> (=Marstonia) <i>pachyta</i>)		Freshwater	
Snail, Lioplax Cylindrical	Endangered	Gastropod	No
(<i>Lioplax cyclostomaformis</i>)		Freshwater	
Snail, Tulotoma	Endangered	Gastropod	No
(<i>Tulotoma magnifica</i>)		Terrestrial	
Bat, Gray	Endangered	Mammal	No
(<i>Myotis grisescens</i>)		Subterranean, Terrestrial	
Bat, Indiana	Endangered	Mammal	Yes
(<i>Myotis sodalis</i>)		Subterranean, Terrestrial	
Mouse, Alabama Beach	Endangered	Mammal	Yes
(<i>Peromyscus polionotus ammobates</i>)		Terrestrial, Coastal (neritic)	
Mouse, Perdido Key Beach	Endangered	Mammal	Yes
(<i>Peromyscus polionotus trissyllepsis</i>)		Coastal (neritic)	
Grass, Tennessee Yellow-eyed	Endangered	Monocot	No
(<i>Xyris tennesseensis</i>)		Terrestrial	

Alabama

(86) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Trillium, Relict (<i>Trillium reliquum</i>)	Endangered	Monocot Terrestrial	No
Water-plantain, Kral's (<i>Sagittaria secundifolia</i>)	Threatened	Monocot Freshwater	No
Sea turtle, loggerhead (<i>Caretta caretta</i>)	Threatened	Reptile Saltwater	No
Snake, Eastern Indigo (<i>Drymarchon corais couperi</i>)	Threatened	Reptile Terrestrial	No
Tortoise, Gopher (<i>Gopherus polyphemus</i>)	Threatened	Reptile Terrestrial	No
Turtle, Alabama Red-bellied (<i>Pseudemys alabamensis</i>)	Endangered	Reptile Terrestrial, Freshwater	No
Turtle, Flattened Musk (<i>Sternotherus depressus</i>)	Threatened	Reptile Freshwater, Terrestrial	No

Arizona

(56) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Frog, Chiricahua Leopard (<i>Rana chiricahuensis</i>)	Threatened	Amphibian Freshwater, Terrestrial	No
Salamander, Sonora Tiger (<i>Ambystoma tigrinum stebbinsi</i>)	Endangered	Amphibian Vernal pool, Freshwater, Terrestrial	No
Bobwhite, Masked (<i>Colinus virginianus ridgwayi</i>)	Endangered	Bird Terrestrial	No
Condor, California (<i>Gymnogyps californianus</i>)	Endangered	Bird Terrestrial	Yes
Eagle, Bald (<i>Haliaeetus leucocephalus</i>)	Threatened	Bird Terrestrial	No
Falcon, Northern Aplomado (<i>Falco femoralis septentrionalis</i>)	Endangered	Bird Terrestrial	No
Flycatcher, Southwestern Willow (<i>Empidonax traillii extimus</i>)	Endangered	Bird Terrestrial	Yes
Owl, Mexican Spotted (<i>Strix occidentalis lucida</i>)	Threatened	Bird Terrestrial	Yes
Pygmy-owl, Cactus Ferruginous (<i>Glaucidium brasilianum cactorum</i>)	Endangered	Bird Terrestrial	No
Rail, Yuma Clapper (<i>Rallus longirostris yumanensis</i>)	Endangered	Bird Terrestrial	No
Blue-star, Kearney's (<i>Amsonia kearneyana</i>)	Endangered	Dicot Terrestrial	No
Cactus, Arizona Hedgehog (<i>Echinocereus triglochidiatus var. arizonicus</i>)	Endangered	Dicot Terrestrial	No
Cactus, Brady Pincushion (<i>Pediocactus bradyi</i>)	Endangered	Dicot Terrestrial	No
Cactus, Cochise Pincushion (<i>Coryphantha robbinsorum</i>)	Threatened	Dicot Terrestrial	No

Arizona

(56) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Cactus, Nichol's Turk's Head (<i>Echinocactus horizonthalonius</i> var. <i>nicholii</i>)	Endangered	Dicot Terrestrial	No
Cactus, Pima Pineapple (<i>Coryphantha scheeri</i> var. <i>robustispina</i>)	Endangered	Dicot Terrestrial	No
Cactus, Siler Pincushion (<i>Pediocactus</i> (= <i>Echinocactus</i> , = <i>Utahia</i>) <i>sileri</i>)	Threatened	Dicot Terrestrial	No
Cliffrose, Arizona (<i>Purshia</i> (= <i>cowania</i>) <i>subintegra</i>)	Endangered	Dicot Terrestrial	No
Cycladenia, Jones (<i>Cycladenia jonesii</i> (= <i>humilis</i>))	Threatened	Dicot Terrestrial	No
Fleabane, Zuni (<i>Erigeron rhizomatus</i>)	Threatened	Dicot Terrestrial	No
Groundsel, San Francisco Peaks (<i>Senecio franciscanus</i>)	Threatened	Dicot Terrestrial	Yes
Milk-vetch, Holmgren (<i>Astragalus holmgreniorum</i>)	Endangered	Dicot Terrestrial	No
Milk-vetch, Sentry (<i>Astragalus cremnophylax</i> var. <i>cremnophylax</i>)	Endangered	Dicot Terrestrial	No
Milkweed, Welsh's (<i>Asclepias welshii</i>)	Threatened	Dicot Terrestrial	Yes
Umbel, Huachuca Water (<i>Lilaeopsis schaffneriana</i> var. <i>recurva</i>)	Endangered	Dicot Terrestrial, Freshwater	Yes
Catfish, Yaqui (<i>Ictalurus pricei</i>)	Threatened	Fish Freshwater	Yes
Chub, Bonytail (<i>Gila elegans</i>)	Endangered	Fish Freshwater	Yes
Chub, Gila (<i>Gila intermedia</i>)	Endangered	Fish Freshwater	Yes
Chub, Humpback (<i>Gila cypha</i>)	Endangered	Fish Freshwater	Yes
Chub, Sonora (<i>Gila ditaenia</i>)	Threatened	Fish Freshwater	Yes
Chub, Virgin River (<i>Gila seminuda</i> (= <i>robusta</i>))	Endangered	Fish Freshwater	Yes
Chub, Yaqui (<i>Gila purpurea</i>)	Endangered	Fish Freshwater	Yes
Minnow, Loach (<i>Tiaroga cobitis</i>)	Threatened	Fish Freshwater	Yes
Pupfish, Desert (<i>Cyprinodon macularius</i>)	Endangered	Fish Freshwater	Yes
Shiner, Beautiful (<i>Cyprinella formosa</i>)	Threatened	Fish Freshwater	Yes

Arizona

(56) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Spikedace	Threatened	Fish	Yes
(<i>Meda fulgida</i>)		Freshwater	
Spinedace, Little Colorado	Threatened	Fish	Yes
(<i>Lepidomeda vittata</i>)		Freshwater	
Squawfish, Colorado	Endangered	Fish	Yes
(<i>Ptychocheilus lucius</i>)		Freshwater	
Sucker, Razorback	Endangered	Fish	Yes
(<i>Xyrauchen texanus</i>)		Freshwater	
Topminnow, Gila (Yaqui)	Endangered	Fish	No
(<i>Poeciliopsis occidentalis</i>)		Freshwater	
Trout, Apache	Threatened	Fish	No
(<i>Oncorhynchus apache</i>)		Freshwater	
Trout, Gila	Endangered	Fish	No
(<i>Oncorhynchus gilae</i>)		Freshwater	
Woundfin	Endangered	Fish	Yes
(<i>Plagopterus argentissimus</i>)		Freshwater	
Ambersnail, Kanab	Endangered	Gastropod	No
(<i>Oxyloma haydeni kanabensis</i>)		Freshwater, Terrestrial	
Bat, Lesser (=Sanborn's) Long-nosed	Endangered	Mammal	No
(<i>Leptonycteris curasoae yerbabuenae</i>)		Subterranean, Terrestrial	
Ferret, Black-footed	Endangered	Mammal	No
(<i>Mustela nigripes</i>)		Terrestrial	
Jaguar	Endangered	Mammal	No
(<i>Panthera onca</i>)		Terrestrial	
Jaguarundi, Sinaloa	Endangered	Mammal	No
(<i>Herpailurus (=Felis) yagouaroundi tolteca</i>)		Terrestrial	
Ocelot	Endangered	Mammal	No
(<i>Leopardus (=Felis) pardalis</i>)		Terrestrial	
Pronghorn, Sonoran	Endangered	Mammal	No
(<i>Antilocapra americana sonoriensis</i>)		Terrestrial	
Squirrel, Mount Graham Red	Endangered	Mammal	Yes
(<i>Tamiasciurus hudsonicus grahamensis</i>)		Terrestrial	
Vole, Hualapai Mexican	Endangered	Mammal	No
(<i>Microtus mexicanus hualpaiensis</i>)		Terrestrial	
Ladies'-tresses, Canelo Hills	Endangered	Monocot	No
(<i>Spiranthes delitescens</i>)		Terrestrial	
Sedge, Navajo	Threatened	Monocot	Yes
(<i>Carex specuicola</i>)		Terrestrial	
Rattlesnake, New Mexican Ridge-nosed	Threatened	Reptile	Yes
(<i>Crotalus willardi obscurus</i>)		Terrestrial	
Tortoise, Desert	Threatened	Reptile	Yes
(<i>Gopherus agassizii</i>)		Terrestrial	

Arkansas

(22) species:

Taxa**Critical Habitat**

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Arkansas

(22) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Tern, Interior (population) Least (<i>Sterna antillarum</i>)	Endangered	Bird Terrestrial	No
Woodpecker, Red-cockaded (<i>Picoides borealis</i>)	Endangered	Bird Terrestrial	No
Fatmucket, Arkansas (<i>Lampsilis powelli</i>)	Threatened	Bivalve Freshwater	No
Mucket, Pink (Pearlymussel) (<i>Lampsilis abrupta</i>)	Endangered	Bivalve Freshwater	No
Mussel, Scaleshell (<i>Leptodea leptodon</i>)	Endangered	Bivalve Freshwater	No
Mussel, Speckled Pocketbook (<i>Lampsilis streckeri</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Fat Pocketbook (<i>Potamilus capax</i>)	Endangered	Bivalve Freshwater	No
Rock-pocketbook, Ouachita (=Wheeler's pm) (<i>Arkansia wheeleri</i>)	Endangered	Bivalve Freshwater	No
Crayfish, Cave (Cambarus aculabrum) (<i>Cambarus aculabrum</i>)	Endangered	Crustacean Freshwater	No
Crayfish, Cave (Cambarus zophonastes) (<i>Cambarus zophonastes</i>)	Endangered	Crustacean Freshwater	No
Bladderpod, Missouri (<i>Lesquerella filiformis</i>)	Threatened	Dicot Terrestrial	No
Fruit, Earth (=geocarpon) (<i>Geocarpon minimum</i>)	Threatened	Dicot Terrestrial	No
Harperella (<i>Ptilimnium nodosum</i>)	Endangered	Dicot Freshwater	No
Pondberry (<i>Lindera melissifolia</i>)	Endangered	Dicot Terrestrial	No
Cavefish, Ozark (<i>Amblyopsis rosae</i>)	Threatened	Fish Freshwater	No
Darter, Leopard (<i>Percina pantherina</i>)	Threatened	Fish Freshwater	Yes
Sturgeon, Pallid (<i>Scaphirhynchus albus</i>)	Endangered	Fish Freshwater	No
Shagreen, Magazine Mountain (<i>Mesodon magazinensis</i>)	Threatened	Gastropod Terrestrial	No
Beetle, American Burying (<i>Nicrophorus americanus</i>)	Endangered	Insect Terrestrial	No
Bat, Gray (<i>Myotis grisescens</i>)	Endangered	Mammal Subterranean, Terrestrial	No
Bat, Indiana (<i>Myotis sodalis</i>)	Endangered	Mammal Subterranean, Terrestrial	Yes

Arkansas

(22) species:

Bat, Ozark Big-eared

(Corynorhinus (=Plecotus) townsendii ingens)

Endangered

Taxa

Mammal

Critical Habitat

No

Terrestrial, Subterraneous

California

(290) species:

Frog, California Red-legged

(Rana aurora draytonii)

Threatened

Taxa

Amphibian

Critical Habitat

Yes

Terrestrial, Freshwater

Frog, Mountain Yellow-legged

(Gopherus agassizii)

Endangered

Amphibian

No

Terrestrial, Freshwater

Salamander, California Tiger

(Ambystoma californiense)

Endangered

Amphibian

No

Terrestrial, Vernal pool

Salamander, Desert Slender

(Batrachoseps aridus)

Endangered

Amphibian

No

Freshwater, Terrestrial

Salamander, Santa Cruz Long-toed

(Ambystoma macrodactylum croceum)

Endangered

Amphibian

No

Freshwater, Vernal pool, Terrestrial

Toad, Arroyo Southwestern

(Bufo californicus (=microscaphus))

Endangered

Amphibian

Yes

Freshwater, Terrestrial

Condor, California

(Gymnogyps californianus)

Endangered

Bird

Yes

Terrestrial

Flycatcher, Southwestern Willow

(Empidonax traillii extimus)

Endangered

Bird

Yes

Terrestrial

Gnatcatcher, Coastal California

(Poliophtila californica californica)

Threatened

Bird

Yes

Terrestrial

Murrelet, Marbled

(Brachyramphus marmoratus marmoratus)

Threatened

Bird

Yes

Freshwater, Terrestrial, Saltwater

Owl, Northern Spotted

(Strix occidentalis caurina)

Threatened

Bird

Yes

Terrestrial

Plover, Western Snowy

(Charadrius alexandrinus nivosus)

Threatened

Bird

Yes

Terrestrial

Rail, California Clapper

(Rallus longirostris obsoletus)

Endangered

Bird

No

Terrestrial

Rail, Light-footed Clapper

(Rallus longirostris levipes)

Endangered

Bird

No

Terrestrial

Rail, Yuma Clapper

(Rallus longirostris yumanensis)

Endangered

Bird

No

Terrestrial

Shrike, San Clemente Loggerhead

(Lanius ludovicianus mearnsi)

Endangered

Bird

No

Terrestrial

Sparrow, San Clemente Sage

(Amphispiza belli clementeae)

Threatened

Bird

No

Terrestrial

Tern, California Least

(Sterna antillarum browni)

Endangered

Bird

No

Terrestrial

Towhee, Inyo Brown

(Pipilo crissalis eremophilus)

Threatened

Bird

Yes

Terrestrial

Vireo, Least Bell's

(Vireo bellii pusillus)

Endangered

Bird

Yes

Terrestrial

California

(290) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Cypress, Gowen (<i>Cupressus goveniana</i> ssp. <i>goveniana</i>)	Threatened	Conf/cycds Terrestrial	No
Cypress, Santa Cruz (<i>Cupressus abramsiana</i>)	Endangered	Conf/cycds Terrestrial	No
Crayfish, Shasta (<i>Pacifastacus fortis</i>)	Endangered	Crustacean Freshwater	No
Fairy Shrimp, Conservancy Fairy (<i>Branchinecta conservatio</i>)	Endangered	Crustacean Vernal pool	Yes
Fairy Shrimp, Longhorn (<i>Branchinecta longiantenna</i>)	Endangered	Crustacean Vernal pool	Yes
Fairy Shrimp, Riverside (<i>Streptocephalus woottoni</i>)	Endangered	Crustacean Vernal pool	Yes
Fairy Shrimp, San Diego (<i>Branchinecta sandiegonensis</i>)	Endangered	Crustacean Vernal pool	Yes
Fairy Shrimp, Vernal Pool (<i>Branchinecta lynchi</i>)	Threatened	Crustacean Vernal pool	Yes
Shrimp, California Freshwater (<i>Syncares pacifica</i>)	Endangered	Crustacean Freshwater	No
Tadpole Shrimp, Vernal Pool (<i>Lepidurus packardii</i>)	Endangered	Crustacean Vernal pool	Yes
Adobe Sunburst, San Joaquin (<i>Pseudobahia peirsonii</i>)	Threatened	Dicot Terrestrial	No
Allocarya, Calistoga (<i>Plagiobothrys strictus</i>)	Endangered	Dicot Vernal pool	No
Ambrosia, San Diego (<i>Ambrosia pumila</i>)	Endangered	Dicot Terrestrial	No
Baccharis, Encinitas (<i>Baccharis vanessae</i>)	Threatened	Dicot Terrestrial	No
Barberry, Island (<i>Berberis pinnata</i> ssp. <i>insularis</i>)	Endangered	Dicot Terrestrial	No
Barberry, Nevin's (<i>Berberis nevinii</i>)	Endangered	Dicot Terrestrial	No
Bedstraw, El Dorado (<i>Galium californicum</i> ssp. <i>sierrae</i>)	Endangered	Dicot Terrestrial	No
Bedstraw, Island (<i>Galium buxifolium</i>)	Endangered	Dicot Terrestrial	No
Bird's-beak, Palmate-bracted (<i>Cordylanthus palmatus</i>)	Endangered	Dicot Terrestrial	No
Bird's-beak, Pennell's (<i>Cordylanthus tenuis</i> ssp. <i>capillaris</i>)	Endangered	Dicot Terrestrial	No
Bird's-beak, salt marsh (<i>Cordylanthus maritimus</i> ssp. <i>maritimus</i>)	Endangered	Dicot Saltwater	No

California

(290) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Bird's-beak, Soft	Endangered	Dicot	No
(<i>Cordylanthus mollis</i> ssp. <i>mollis</i>)		Brackish, Saltwater	
Bladderpod, San Bernardino Mountains	Endangered	Dicot	Yes
(<i>Lesquerella kingii</i> ssp. <i>bernardina</i>)		Terrestrial	
Bluecurls, Hidden Lake	Threatened	Dicot	No
(<i>Trichostema austromontanum</i> ssp. <i>compactum</i>)		Terrestrial	
Broom, San Clemente Island	Endangered	Dicot	No
(<i>Lotus dendroideus</i> ssp. <i>traskiae</i>)		Terrestrial	
Buckwheat, Cushenbury	Endangered	Dicot	Yes
(<i>Eriogonum ovalifolium</i> var. <i>vineum</i>)		Terrestrial	
Buckwheat, Lone (incl. Irish Hill)	Endangered	Dicot	No
(<i>Eriogonum apricum</i> (incl. var. <i>prostratum</i>))		Terrestrial	
Buckwheat, Southern Mountain Wild	Threatened	Dicot	No
(<i>Eriogonum kennedyi</i> var. <i>austromontanum</i>)		Terrestrial	
Bush-mallow, San Clemente Island	Endangered	Dicot	No
(<i>Malacothamnus clementinus</i>)		Terrestrial	
Bush-mallow, Santa Cruz Island	Endangered	Dicot	No
(<i>Malacothamnus fasciculatus</i> var. <i>nesioticus</i>)		Terrestrial	
Butterweed, Layne's	Threatened	Dicot	No
(<i>Senecio layneae</i>)		Terrestrial	
Button-celery, San Diego	Endangered	Dicot	No
(<i>Eryngium aristulatum</i> var. <i>parishii</i>)		Terrestrial	
Cactus, Bakersfield	Endangered	Dicot	No
(<i>Opuntia treleasei</i>)		Terrestrial	
Ceanothus, Coyote	Endangered	Dicot	No
(<i>Ceanothus ferrisae</i>)		Terrestrial	
Ceanothus, Pine Hill	Endangered	Dicot	No
(<i>Ceanothus roderickii</i>)		Terrestrial	
Ceanothus, Vail Lake	Threatened	Dicot	No
(<i>Ceanothus ophiophilus</i>)		Terrestrial	
Centaury, Spring-loving	Threatened	Dicot	Yes
(<i>Centaurium namophilum</i>)		Terrestrial	
Checker-mallow, Keck's	Endangered	Dicot	Yes
(<i>Sidalcea keckii</i>)		Terrestrial	
Checker-mallow, Kenwood Marsh	Endangered	Dicot	No
(<i>Sidalcea oregana</i> ssp. <i>valida</i>)		Terrestrial	
Checker-mallow, Pedate	Endangered	Dicot	No
(<i>Sidalcea pedata</i>)		Terrestrial	
Clarkia, Pismo	Endangered	Dicot	No
(<i>Clarkia speciosa</i> ssp. <i>immaculata</i>)		Terrestrial	
Clarkia, Presidio	Endangered	Dicot	No
(<i>Clarkia franciscana</i>)		Terrestrial	

California

(290) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Clarkia, Springville	Threatened	Dicot	No
(<i>Clarkia springvillensis</i>)		Terrestrial	
Clarkia, Vine Hill	Endangered	Dicot	No
(<i>Clarkia imbricata</i>)		Terrestrial	
Clover, Fleshy Owl's	Threatened	Dicot	Yes
(<i>Castilleja campestris</i> ssp. <i>succulenta</i>)		Vernal pool	
Clover, Monterey	Endangered	Dicot	No
(<i>Trifolium trichocalyx</i>)		Terrestrial	
Clover, Showy Indian	Endangered	Dicot	No
(<i>Trifolium amoenum</i>)		Terrestrial	
Coyote-thistle, Loch Lomond	Endangered	Dicot	No
(<i>Eryngium constancei</i>)		Terrestrial	
Crownbeard, Big-leaved	Threatened	Dicot	No
(<i>Verbesina dissita</i>)		Terrestrial	
Crownscale, San Jacinto Valley	Endangered	Dicot	No
(<i>Atriplex coronata</i> var. <i>notatior</i>)		Terrestrial	
Daisy, Parish's	Threatened	Dicot	Yes
(<i>Erigeron parishii</i>)		Freshwater	
Dudleya, Conejo	Threatened	Dicot	No
(<i>Dudleya abramsii</i> ssp. <i>parva</i>)		Terrestrial	
Dudleya, Marcescent	Threatened	Dicot	No
(<i>Dudleya cymosa</i> ssp. <i>marcescens</i>)		Terrestrial	
Dudleya, Santa Clara Valley	Endangered	Dicot	No
(<i>Dudleya setchellii</i>)		Terrestrial	
Dudleya, Santa Cruz Island	Threatened	Dicot	No
(<i>Dudleya nesiotica</i>)		Terrestrial	
Dudleya, Santa Monica Mountains	Threatened	Dicot	No
(<i>Dudleya cymosa</i> ssp. <i>ovatifolia</i>)		Terrestrial	
Dudleya, Verity's	Threatened	Dicot	No
(<i>Dudleya verityi</i>)		Terrestrial	
Dwarf-flax, Marin	Threatened	Dicot	No
(<i>Hesperolinon congestum</i>)		Terrestrial	
Evening-primrose, Antioch Dunes	Endangered	Dicot	Yes
(<i>Oenothera deltooides</i> ssp. <i>howellii</i>)		Terrestrial	
Evening-primrose, Eureka Valley	Endangered	Dicot	No
(<i>Oenothera avita</i> ssp. <i>eurekaensis</i>)		Terrestrial	
Evening-primrose, San Benito	Threatened	Dicot	No
(<i>Camissonia benitensis</i>)		Terrestrial	
Fiddleneck, Large-flowered	Endangered	Dicot	Yes
(<i>Amsinckia grandiflora</i>)		Terrestrial	
Flannelbush, Mexican	Endangered	Dicot	No
(<i>Fremontodendron mexicanum</i>)		Terrestrial	

California

(290) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Flannelbush, Pine Hill	Endangered	Dicot	No
(<i>Fremontodendron californicum</i> ssp. <i>decumbens</i>)		Terrestrial	
Fringepod, Santa Cruz Island	Endangered	Dicot	No
(<i>Thysanocarpus conchuliferus</i>)		Terrestrial	
Gilia, Hoffmann's Slender-flowered	Endangered	Dicot	No
(<i>Gilia tenuiflora</i> ssp. <i>hoffmannii</i>)		Terrestrial	
Gilia, Monterey	Endangered	Dicot	No
(<i>Gilia tenuiflora</i> ssp. <i>arenaria</i>)		Terrestrial	
Golden Sunburst, Hartweg's	Endangered	Dicot	No
(<i>Pseudobahia bahiifolia</i>)		Terrestrial	
Goldfields, Burke's	Endangered	Dicot	No
(<i>Lasthenia burkei</i>)		Terrestrial	
Goldfields, Contra Costa	Endangered	Dicot	Yes
(<i>Lasthenia conjugens</i>)		Terrestrial	
Grass, Hairy Orcutt	Endangered	Dicot	Yes
(<i>Orcuttia pilosa</i>)		Vernal pool	
Grass, Sacramento Orcutt	Endangered	Dicot	Yes
(<i>Orcuttia viscida</i>)		Vernal pool	
Grass, Slender Orcutt	Threatened	Dicot	Yes
(<i>Orcuttia tenuis</i>)		Vernal pool	
Gumplant, Ash Meadows	Threatened	Dicot	Yes
(<i>Grindelia fraxino-pratensis</i>)		Terrestrial	
Ivesia, Ash Meadows	Threatened	Dicot	Yes
(<i>Ivesia kingii</i> var. <i>eremica</i>)		Terrestrial	
Jewelflower, California	Endangered	Dicot	No
(<i>Caulanthus californicus</i>)		Terrestrial	
Jewelflower, Tiburon	Endangered	Dicot	No
(<i>Streptanthus niger</i>)		Terrestrial	
Larkspur, Baker's	Endangered	Dicot	Yes
(<i>Delphinium bakeri</i>)		Terrestrial	
Larkspur, San Clemente Island	Endangered	Dicot	No
(<i>Delphinium variegatum</i> ssp. <i>kinkiense</i>)		Terrestrial	
Larkspur, Yellow	Endangered	Dicot	Yes
(<i>Delphinium luteum</i>)		Terrestrial	
Layia, Beach	Endangered	Dicot	No
(<i>Layia carnosa</i>)		Terrestrial, Coastal (neritic)	
Lessingia, San Francisco	Endangered	Dicot	No
(<i>Lessingia germanorum</i> (=L.g. var. <i>germanorum</i>))		Terrestrial	
Liveforever, Laguna Beach	Threatened	Dicot	No
(<i>Dudleya stolonifera</i>)		Terrestrial	
Liveforever, Santa Barbara Island	Endangered	Dicot	No
(<i>Dudleya traskiae</i>)		Terrestrial	

California

(290) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Lupine, Clover	Endangered	Dicot	No
(<i>Lupinus tidestromii</i>)		Coastal (neritic)	
Lupine, Nipomo Mesa	Endangered	Dicot	No
(<i>Lupinus nipomensis</i>)		Coastal (neritic)	
Malacothrix, Island	Endangered	Dicot	No
(<i>Malacothrix squalida</i>)		Terrestrial	
Malacothrix, Santa Cruz Island	Endangered	Dicot	No
(<i>Malacothrix indecora</i>)		Terrestrial	
Mallow, Kern	Endangered	Dicot	No
(<i>Eremalche kernensis</i>)		Terrestrial	
Manzanita, Del Mar	Endangered	Dicot	No
(<i>Arctostaphylos glandulosa ssp. crassifolia</i>)		Terrestrial	
Manzanita, Lone	Threatened	Dicot	No
(<i>Arctostaphylos myrtifolia</i>)		Terrestrial	
Manzanita, Morro	Threatened	Dicot	No
(<i>Arctostaphylos morroensis</i>)		Terrestrial	
Manzanita, Pallid	Threatened	Dicot	No
(<i>Arctostaphylos pallida</i>)		Terrestrial	
Manzanita, Santa Rosa Island	Endangered	Dicot	No
(<i>Arctostaphylos confertiflora</i>)		Terrestrial	
Meadowfoam, Butte County	Endangered	Dicot	Yes
(<i>Limnanthes floccosa ssp. californica</i>)		Vernal pool	
Meadowfoam, Sebastopol	Endangered	Dicot	No
(<i>Limnanthes vinculans</i>)		Freshwater, Terrestrial	
Milk-vetch, Braunton's	Endangered	Dicot	No
(<i>Astragalus brauntonii</i>)		Terrestrial	
Milk-vetch, Clara Hunt's	Endangered	Dicot	No
(<i>Astragalus clarianus</i>)		Terrestrial	
Milk-vetch, Coachella Valley	Endangered	Dicot	Yes
(<i>Astragalus lentiginosus var. coachellae</i>)		Terrestrial	
Milk-vetch, Coastal Dunes	Endangered	Dicot	No
(<i>Astragalus tener var. titi</i>)		Terrestrial	
Milk-vetch, Cushenbury	Endangered	Dicot	Yes
(<i>Astragalus albens</i>)		Terrestrial	
Milk-vetch, Fish Slough	Threatened	Dicot	No
(<i>Astragalus lentiginosus var. piscinensis</i>)		Terrestrial	
Milk-vetch, Lane Mountain	Endangered	Dicot	Yes
(<i>Astragalus jaegerianus</i>)		Terrestrial	
Milk-vetch, Pierson's	Threatened	Dicot	Yes
(<i>Astragalus magdalenae var. peirsonii</i>)		Terrestrial	
Milk-vetch, Triple-ribbed	Endangered	Dicot	No
(<i>Astragalus tricarinatus</i>)		Terrestrial	

California

(290) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Milk-vetch, Ventura Marsh	Endangered	Dicot	Yes
(<i>Astragalus pycnostachyus</i> var. <i>lanosissimus</i>)		Terrestrial, Freshwater	
Mint, Otay Mesa	Endangered	Dicot	No
(<i>Pogogyne nudiuscula</i>)		Terrestrial	
Mint, San Diego Mesa	Endangered	Dicot	No
(<i>Pogogyne abramsii</i>)		Terrestrial	
Monardella, Willowy	Endangered	Dicot	No
(<i>Monardella linoides</i> ssp. <i>viminea</i>)		Terrestrial	
Morning-glory, Stebbins	Endangered	Dicot	No
(<i>Calystegia stebbinsii</i>)		Terrestrial	
Mountainbalm, Indian Knob	Endangered	Dicot	No
(<i>Eriodictyon altissimum</i>)		Terrestrial	
Mountain-mahogany, Catalina Island	Endangered	Dicot	No
(<i>Cercocarpus traskiae</i>)		Terrestrial	
Mustard, Slender-petaled	Endangered	Dicot	No
(<i>Thelypodium stenopetalum</i>)		Terrestrial	
Navarretia, Few-flowered	Endangered	Dicot	No
(<i>Navarretia leucocephala</i> ssp. <i>pauciflora</i> (=N. <i>pauciflora</i>))		Vernal pool, Terrestrial	
Navarretia, Many-flowered	Endangered	Dicot	No
(<i>Navarretia leucocephala</i> ssp. <i>plieantha</i>)		Terrestrial, Vernal pool	
Navarretia, Spreading	Threatened	Dicot	No
(<i>Navarretia fossalis</i>)		Vernal pool	
Niterwort, Amargosa	Endangered	Dicot	Yes
(<i>Nitrophila mohavensis</i>)		Terrestrial	
Oxytheca, Cushenbury	Endangered	Dicot	Yes
(<i>Oxytheca parishii</i> var. <i>goodmaniana</i>)		Terrestrial	
Paintbrush, Ash-grey Indian	Threatened	Dicot	No
(<i>Castilleja cinerea</i>)		Terrestrial	
Paintbrush, San Clemente Island Indian	Endangered	Dicot	No
(<i>Castilleja grisea</i>)		Terrestrial	
Paintbrush, Soft-leaved	Endangered	Dicot	No
(<i>Castilleja mollis</i>)		Terrestrial	
Paintbrush, Tiburon	Endangered	Dicot	No
(<i>Castilleja affinis</i> ssp. <i>neglecta</i>)		Terrestrial	
Penny-cress, Kneeland Prairie	Endangered	Dicot	Yes
(<i>Thlaspi californicum</i>)		Terrestrial	
Pentachaeta, Lyon's	Endangered	Dicot	No
(<i>Pentachaeta lyonii</i>)		Terrestrial	
Pentachaeta, White-rayed	Endangered	Dicot	No
(<i>Pentachaeta bellidiflora</i>)		Terrestrial	
Phacelia, Island	Endangered	Dicot	No
(<i>Phacelia insularis</i> ssp. <i>insularis</i>)		Terrestrial	

California

(290) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Phlox, Yreka	Endangered	Dicot	No
(<i>Phlox hirsuta</i>)		Terrestrial	
Polygonum, Scott's Valley	Endangered	Dicot	Yes
(<i>Polygonum hickmanii</i>)		Terrestrial	
Potentilla, Hickman's	Endangered	Dicot	No
(<i>Potentilla hickmanii</i>)		Terrestrial	
Pussypaws, Mariposa	Threatened	Dicot	No
(<i>Calyptridium pulchellum</i>)		Terrestrial	
Rock-cress, Hoffmann's	Endangered	Dicot	No
(<i>Arabis hoffmannii</i>)		Terrestrial	
Rock-cress, McDonald's	Endangered	Dicot	No
(<i>Arabis mcdonaldiana</i>)		Terrestrial	
Rock-cress, Santa Cruz Island	Endangered	Dicot	No
(<i>Sibara filifolia</i>)		Terrestrial	
Rush-rose, Island	Threatened	Dicot	No
(<i>Helianthemum greenei</i>)		Terrestrial	
Sandwort, Bear Valley	Threatened	Dicot	No
(<i>Arenaria ursina</i>)		Terrestrial	
Sandwort, Marsh	Endangered	Dicot	No
(<i>Arenaria paludicola</i>)		Freshwater, Terrestrial	
Sea-blite, California	Endangered	Dicot	No
(<i>Suaeda californica</i>)		Terrestrial	
Spineflower, Ben Lomond	Endangered	Dicot	No
(<i>Chorizanthe pungens</i> var. <i>hartwegiana</i>)		Terrestrial	
Spineflower, Howell's	Endangered	Dicot	No
(<i>Chorizanthe howellii</i>)		Terrestrial	
Spineflower, Monterey	Threatened	Dicot	Yes
(<i>Chorizanthe pungens</i> var. <i>pungens</i>)		Terrestrial	
Spineflower, Orcutt's	Endangered	Dicot	No
(<i>Chorizanthe orcuttiana</i>)		Terrestrial	
Spineflower, Robust	Endangered	Dicot	Yes
(<i>Chorizanthe robusta</i> var. <i>robusta</i>)		Terrestrial	
Spineflower, Scotts Valley	Endangered	Dicot	Yes
(<i>Chorizanthe robusta</i> var. <i>hartwegii</i>)		Terrestrial	
Spineflower, Slender-horned	Endangered	Dicot	No
(<i>Dodecahema leptoceras</i>)		Terrestrial	
Spineflower, Sonoma	Endangered	Dicot	No
(<i>Chorizanthe valida</i>)		Terrestrial	
Spurge, Hoover's	Threatened	Dicot	Yes
(<i>Chamaesyce hooveri</i>)		Vernal pool	
Stickysed, Baker's	Endangered	Dicot	No
(<i>Blennosperma bakeri</i>)		Vernal pool	

California

(290) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Stonecrop, Lake County	Endangered	Dicot	No
(<i>Parvisedum leiocarpum</i>)		Vernal pool	
Sunflower, San Mateo Woolly	Endangered	Dicot	No
(<i>Eriophyllum latilobum</i>)		Terrestrial	
Taraxacum, California	Endangered	Dicot	No
(<i>Taraxacum californicum</i>)		Terrestrial	
Tarplant, Gaviota	Endangered	Dicot	Yes
(<i>Deinandra increscens</i> ssp. <i>villosa</i>)		Terrestrial	
Tarplant, Otay	Threatened	Dicot	Yes
(<i>Deinandra</i> (= <i>Hemizonia</i>) <i>conjugens</i>)		Terrestrial	
Tarplant, Santa Cruz	Threatened	Dicot	Yes
(<i>Holocarpha macradenia</i>)		Terrestrial	
Thistle, Chorro creek Bog	Endangered	Dicot	No
(<i>Cirsium fontinale</i> var. <i>obispoense</i>)		Terrestrial, Freshwater	
Thistle, Fountain	Endangered	Dicot	No
(<i>Cirsium fontinale</i> var. <i>fontinale</i>)		Terrestrial	
Thistle, La Graciosa	Endangered	Dicot	Yes
(<i>Cirsium loncholepis</i>)		Coastal (neritic), Freshwater,	
Thistle, Suisun	Endangered	Dicot	No
(<i>Cirsium hydrophilum</i> var. <i>hydrophilum</i>)		Brackish, Terrestrial	
Thornmint, San Diego	Threatened	Dicot	No
(<i>Acanthomintha ilicifolia</i>)		Terrestrial	
Thornmint, San Mateo	Endangered	Dicot	No
(<i>Acanthomintha obovata</i> ssp. <i>duttonii</i>)		Terrestrial	
Tuctoria, Green's	Endangered	Dicot	Yes
(<i>Tuctoria greenei</i>)		Vernal pool	
Vervain, California	Threatened	Dicot	No
(<i>Verbena californica</i>)		Terrestrial	
Wallflower, Ben Lomond	Endangered	Dicot	No
(<i>Erysimum teretifolium</i>)		Terrestrial	
Wallflower, Contra Costa	Endangered	Dicot	Yes
(<i>Erysimum capitatum</i> var. <i>angustatum</i>)		Terrestrial	
Wallflower, Menzie's	Endangered	Dicot	No
(<i>Erysimum menziesii</i>)		Terrestrial	
Watercress, Gambel's	Endangered	Dicot	No
(<i>Rorippa gambellii</i>)		Terrestrial, Brackish, Freshwater	
Woodland-star, San Clemente Island	Endangered	Dicot	No
(<i>Lithophragma maximum</i>)		Terrestrial	
Woolly-star, Santa Ana River	Endangered	Dicot	No
(<i>Eriastrum densifolium</i> ssp. <i>sanctorum</i>)		Terrestrial	
Woolly-threads, San Joaquin	Endangered	Dicot	No
(<i>Monolopia</i> (= <i>Lembertia</i>) <i>congdonii</i>)		Terrestrial	

California

(290) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Yerba Santa, Lompoc	Endangered	Dicot	Yes
(<i>Eriodictyon capitatum</i>)		Terrestrial	
Chub, Bonytail	Endangered	Fish	Yes
(<i>Gila elegans</i>)		Freshwater	
Chub, Hutton Tui	Threatened	Fish	No
(<i>Gila bicolor ssp.</i>)		Freshwater	
Chub, Mohave Tui	Endangered	Fish	No
(<i>Gila bicolor mohavensis</i>)		Freshwater	
Chub, Owens Tui	Endangered	Fish	Yes
(<i>Gila bicolor snyderi</i>)		Freshwater	
Dace, Ash Meadows Speckled	Endangered	Fish	Yes
(<i>Rhinichthys osculus nevadensis</i>)		Freshwater	
Goby, Tidewater	Endangered	Fish	Yes
(<i>Eucyclogobius newberryi</i>)		Freshwater	
Pupfish, Desert	Endangered	Fish	Yes
(<i>Cyprinodon macularius</i>)		Freshwater	
Pupfish, Owens	Endangered	Fish	No
(<i>Cyprinodon radiosus</i>)		Freshwater	
Salmon, Chinook (California Coastal Run)	Threatened	Fish	Yes
(<i>Oncorhynchus (=Salmo) tshawytscha</i>)		Freshwater, Saltwater, Brackish	
Salmon, Chinook (Central Valley Fall Run)	Threatened	Fish	No
(<i>Oncorhynchus (=Salmo) tshawytscha</i>)		Brackish, Freshwater, Saltwater	
Salmon, Chinook (Central Valley Spring Run)	Threatened	Fish	Yes
(<i>Oncorhynchus (=Salmo) tshawytscha</i>)		Brackish, Saltwater, Freshwater	
Salmon, Chinook (Sacramento River Winter Run)	Endangered	Fish	No
(<i>Oncorhynchus (=Salmo) tshawytscha</i>)		Saltwater, Freshwater, Brackish	
Salmon, Coho (Central California Coast population)	Endangered	Fish	No
(<i>Oncorhynchus (=Salmo) kisutch</i>)		Saltwater, Brackish, Freshwater	
Salmon, Coho (Southern OR/Northern CA Coast)	Threatened	Fish	Yes
(<i>Oncorhynchus (=Salmo) kisutch</i>)		Freshwater, Brackish, Saltwater	
Smelt, Delta	Threatened	Fish	Yes
(<i>Hypomesus transpacificus</i>)		Freshwater, Brackish	
Squawfish, Colorado	Endangered	Fish	Yes
(<i>Ptychocheilus lucius</i>)		Freshwater	
Steelhead, (California Central Valley population)	Threatened	Fish	Yes
(<i>Oncorhynchus (=Salmo) mykiss</i>)		Brackish, Freshwater, Saltwater	
Steelhead, (Central California Coast population)	Threatened	Fish	Yes
(<i>Oncorhynchus (=Salmo) mykiss</i>)		Freshwater, Saltwater, Brackish	
Steelhead, (Northern California population)	Threatened	Fish	No
(<i>Oncorhynchus (=Salmo) mykiss</i>)		Saltwater, Brackish, Freshwater	
Steelhead, (South-Central California population)	Threatened	Fish	Yes
(<i>Oncorhynchus (=Salmo) mykiss</i>)		Freshwater, Saltwater, Brackish	

California

(290) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Steelhead, (Southern California population)	Endangered	Fish	Yes
(<i>Oncorhynchus</i> (=Salmo) <i>mykiss</i>)		Brackish, Saltwater, Freshwater	
Stickleback, Unarmored Threespine	Endangered	Fish	No
(<i>Gasterosteus aculeatus williamsoni</i>)		Freshwater	
Sturgeon, green	Threatened	Fish	No
(<i>Acipenser medirostris</i>)			
Sucker, Lost River	Endangered	Fish	No
(<i>Deltistes luxatus</i>)		Freshwater	
Sucker, Modoc	Endangered	Fish	Yes
(<i>Catostomus microps</i>)		Freshwater	
Sucker, Razorback	Endangered	Fish	Yes
(<i>Xyrauchen texanus</i>)		Freshwater	
Sucker, Santa Ana	Threatened	Fish	Yes
(<i>Catostomus santaanae</i>)		Freshwater	
Trout, Lahontan Cutthroat	Threatened	Fish	No
(<i>Oncorhynchus clarki henshawi</i>)		Freshwater	
Trout, Little Kern Golden	Threatened	Fish	Yes
(<i>Oncorhynchus aguabonita whitei</i>)		Freshwater	
Trout, Paiute Cutthroat	Threatened	Fish	No
(<i>Oncorhynchus clarki seleniris</i>)		Freshwater	
Abalone, White	Endangered	Gastropod	No
(<i>Haliotis sorenseni</i>)		Saltwater	
Snail, Morro Shoulderband	Endangered	Gastropod	Yes
(<i>Helminthoglypta walkeriana</i>)		Terrestrial	
Beetle, Delta Green Ground	Threatened	Insect	Yes
(<i>Elaphrus viridis</i>)		Vernal pool, Terrestrial	
Beetle, Mount Hermon June	Endangered	Insect	No
(<i>Polyphylla barbata</i>)		Subterranean, Terrestrial	
Beetle, Ohlone Tiger	Endangered	Insect	No
(<i>Cicindela ohlone</i>)		Terrestrial	
Beetle, Valley Elderberry Longhorn	Threatened	Insect	Yes
(<i>Desmocerus californicus dimorphus</i>)		Terrestrial	
Butterfly, Bay Checkerspot (Wright's euphydryas)	Threatened	Insect	Yes
(<i>Euphydryas editha bayensis</i>)		Terrestrial	
Butterfly, Behren's Silverspot	Endangered	Insect	No
(<i>Speyeria zerene behrensii</i>)		Terrestrial	
Butterfly, Callippe Silverspot	Endangered	Insect	No
(<i>Speyeria callippe callippe</i>)		Terrestrial	
Butterfly, El Segundo Blue	Endangered	Insect	No
(<i>Euphilotes battoides allyni</i>)		Terrestrial	
Butterfly, Lange's Metalmark	Endangered	Insect	No
(<i>Apodemia mormo langei</i>)		Terrestrial	

California

(290) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Butterfly, Lotis Blue	Endangered	Insect	No
(<i>Lycaeides argyrognomon lotis</i>)		Terrestrial	
Butterfly, Mission Blue	Endangered	Insect	No
(<i>Icaricia icarioides missionensis</i>)		Terrestrial	
Butterfly, Myrtle's Silverspot	Endangered	Insect	No
(<i>Speyeria zerene myrtleae</i>)		Terrestrial	
Butterfly, Oregon Silverspot	Threatened	Insect	Yes
(<i>Speyeria zerene hippolyta</i>)		Terrestrial	
Butterfly, Palos Verdes Blue	Endangered	Insect	Yes
(<i>Glaucopsyche lygdamus palosverdesensis</i>)		Terrestrial	
Butterfly, Quino Checkerspot	Endangered	Insect	Yes
(<i>Euphydryas editha quino</i> (=E. e. <i>wrighti</i>))		Terrestrial	
Butterfly, San Bruno Elfin	Endangered	Insect	No
(<i>Callophrys mossii bayensis</i>)		Terrestrial	
Butterfly, Smith's Blue	Endangered	Insect	No
(<i>Euphilotes enoptes smithi</i>)		Terrestrial	
Fly, Delhi Sands Flower-loving	Endangered	Insect	No
(<i>Rhaphiomidas terminatus abdominalis</i>)		Terrestrial	
Grasshopper, Zayante Band-winged	Endangered	Insect	Yes
(<i>Trimerotropis infantilis</i>)		Terrestrial	
Moth, Kern Primrose Sphinx	Threatened	Insect	No
(<i>Euproserpinus euterpe</i>)		Terrestrial	
Skipper, Carson Wandering	Endangered	Insect	No
(<i>Pseudocopaeodes eunus obscurus</i>)		Terrestrial	
Skipper, Laguna Mountain	Endangered	Insect	No
(<i>Pyrgus ruralis lagunae</i>)		Terrestrial	
Fox, San Joaquin Kit	Endangered	Mammal	No
(<i>Vulpes macrotis mutica</i>)		Terrestrial	
Fox, San Miguel Island	Endangered	Mammal	Yes
(<i>Urocyon littoralis littoralis</i>)		Terrestrial	
Fox, Santa Catalina Island	Endangered	Mammal	Yes
(<i>Urocyon littoralis catalinae</i>)		Terrestrial	
Fox, Santa Cruz Island	Endangered	Mammal	Yes
(<i>Urocyon littoralis santacruzae</i>)		Terrestrial	
Fox, Santa Rosa Island	Endangered	Mammal	Yes
(<i>Urocyon littoralis santarosae</i>)		Terrestrial	
Kangaroo Rat, Fresno	Endangered	Mammal	Yes
(<i>Dipodomys nitratoides exilis</i>)		Terrestrial	
Kangaroo Rat, Giant	Endangered	Mammal	No
(<i>Dipodomys ingens</i>)		Terrestrial	
Kangaroo Rat, Morro Bay	Endangered	Mammal	Yes
(<i>Dipodomys heermanni morroensis</i>)		Terrestrial	

California

(290) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Kangaroo Rat, San Bernardino Merriam's (<i>Dipodomys merriami parvus</i>)	Endangered	Mammal Terrestrial	Yes
Kangaroo Rat, Stephens' (<i>Dipodomys stephensi</i> (incl. <i>D. cascus</i>))	Endangered	Mammal Terrestrial	No
Kangaroo Rat, Tipton (<i>Dipodomys nitratoides nitratoides</i>)	Endangered	Mammal Terrestrial	No
Mountain Beaver, Point Arena (<i>Aplodontia rufa nigra</i>)	Endangered	Mammal Freshwater, Terrestrial	No
Mouse, Pacific Pocket (<i>Perognathus longimembris pacificus</i>)	Endangered	Mammal Terrestrial	No
Mouse, Salt Marsh Harvest (<i>Reithrodontomys raviventris</i>)	Endangered	Mammal Terrestrial	No
Rabbit, Riparian Brush (<i>Sylvilagus bachmani riparius</i>)	Endangered	Mammal Terrestrial	No
Sheep, Peninsular Bighorn (<i>Ovis canadensis</i>)	Endangered	Mammal Terrestrial	Yes
Sheep, Sierra Nevada Bighorn (<i>Ovis canadensis californiana</i>)	Endangered	Mammal Terrestrial	No
Shrew, Buena Vista Lake Ornate (<i>Sorex ornatus relictus</i>)	Endangered	Mammal Terrestrial	Yes
Vole, Amargosa (<i>Microtus californicus scirpensis</i>)	Endangered	Mammal Terrestrial	Yes
Woodrat, Riparian (<i>Neotoma fuscipes riparia</i>)	Endangered	Mammal Terrestrial	No
Otter, Southern Sea (<i>Enhydra lutris nereis</i>)	Threatened	Marine mml Saltwater	No
Seal, Guadalupe Fur (<i>Arctocephalus townsendi</i>)	Threatened	Marine mml Coastal (neritic), Saltwater	No
Alopecurus, Sonoma (<i>Alopecurus aequalis</i> var. <i>sonomensis</i>)	Endangered	Monocot Terrestrial	No
Amole, Cammatta Canyon (<i>Chlorogalum purpureum</i> var. <i>reductum</i>)	Threatened	Monocot Terrestrial	Yes
Amole, Purple (<i>Chlorogalum purpureum</i> var. <i>purpureum</i>)	Threatened	Monocot Terrestrial	Yes
Bluegrass, Napa (<i>Poa napensis</i>)	Endangered	Monocot Terrestrial, Freshwater	No
Bluegrass, San Bernardino (<i>Poa atropurpurea</i>)	Endangered	Monocot Terrestrial	No
Brodiaea, Chinese Camp (<i>Brodiaea pallida</i>)	Threatened	Monocot Terrestrial	No
Brodiaea, Thread-leaved (<i>Brodiaea filifolia</i>)	Threatened	Monocot Terrestrial	Yes

California

(290) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Grass, California Orcutt (<i>Orcuttia californica</i>)	Endangered	Monocot Vernal pool, Terrestrial	No
Grass, Colusa (<i>Neostapfia colusana</i>)	Threatened	Monocot Vernal pool	No
Grass, Eureka Dune (<i>Swallenia alexandrae</i>)	Endangered	Monocot Terrestrial	No
Grass, San Joaquin Valley Orcutt (<i>Orcuttia inaequalis</i>)	Threatened	Monocot Vernal pool	Yes
Grass, Solano (<i>Tuctoria mucronata</i>)	Endangered	Monocot Vernal pool, Terrestrial	Yes
Lily, Pitkin Marsh (<i>Lilium pardalinum ssp. pitkinense</i>)	Endangered	Monocot Freshwater	No
Lily, Western (<i>Lilium occidentale</i>)	Endangered	Monocot Terrestrial	No
Onion, Munz's (<i>Allium munzii</i>)	Endangered	Monocot Terrestrial	No
Piperia, Yadon's (<i>Piperia yadonii</i>)	Endangered	Monocot Terrestrial	No
Sedge, White (<i>Carex albida</i>)	Endangered	Monocot Freshwater, Terrestrial	No
Lizard, Blunt-nosed Leopard (<i>Gambelia silus</i>)	Endangered	Reptile Terrestrial	No
Lizard, Coachella Valley Fringe-toed (<i>Uma inornata</i>)	Threatened	Reptile Terrestrial	Yes
Lizard, Island Night (<i>Xantusia riversiana</i>)	Threatened	Reptile Terrestrial	No
Sea turtle, olive ridley (<i>Lepidochelys olivacea</i>)	Threatened	Reptile Saltwater	No
Snake, Giant Garter (<i>Thamnophis gigas</i>)	Threatened	Reptile Freshwater, Terrestrial	No
Snake, San Francisco Garter (<i>Thamnophis sirtalis tetrataenia</i>)	Endangered	Reptile Freshwater, Terrestrial	No
Tortoise, Desert (<i>Gopherus agassizii</i>)	Threatened	Reptile Terrestrial	Yes
Whipsnake (=Striped Racer), Alameda (<i>Masticophis lateralis euryxanthus</i>)	Threatened	Reptile Terrestrial	Yes

Colorado

(16) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Owl, Mexican Spotted (<i>Strix occidentalis lucida</i>)	Threatened	Bird Terrestrial	Yes
Cactus, Knowlton (<i>Pediocactus knowltonii</i>)	Endangered	Dicot Terrestrial	No
Cactus, Mesa Verde (<i>Sclerocactus mesae-verdae</i>)	Threatened	Dicot Terrestrial	No

Colorado

(16) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Cactus, Uinta Basin Hookless (<i>Sclerocactus glaucus</i>)	Threatened	Dicot Terrestrial	No
Milk-vetch, Mancos (<i>Astragalus humillimus</i>)	Endangered	Dicot Terrestrial	No
Wild-buckwheat, Clay-loving (<i>Eriogonum pelinophilum</i>)	Endangered	Dicot Terrestrial	Yes
Chub, Bonytail (<i>Gila elegans</i>)	Endangered	Fish Freshwater	Yes
Chub, Humpback (<i>Gila cypha</i>)	Endangered	Fish Freshwater	Yes
Squawfish, Colorado (<i>Ptychocheilus lucius</i>)	Endangered	Fish Freshwater	Yes
Sucker, Razorback (<i>Xyrauchen texanus</i>)	Endangered	Fish Freshwater	Yes
Trout, Bull (<i>Salvelinus confluentus</i>)	Threatened	Fish Freshwater	No
Trout, Greenback Cutthroat (<i>Oncorhynchus clarki stomias</i>)	Threatened	Fish Freshwater	No
Skipper, Pawnee Montane (<i>Hesperia leonardus montana</i>)	Threatened	Insect Terrestrial	No
Ferret, Black-footed (<i>Mustela nigripes</i>)	Endangered	Mammal Terrestrial	No
Mouse, Preble's Meadow Jumping (<i>Zapus hudsonius preblei</i>)	Threatened	Mammal Terrestrial	Yes
Ladies'-tresses, Ute (<i>Spiranthes diluvialis</i>)	Threatened	Monocot Terrestrial	No

Connecticut

(9) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Plover, Piping (<i>Charadrius melodus</i>)	Endangered	Bird Terrestrial	Yes
Tern, Roseate (<i>Sterna dougallii dougallii</i>)	Endangered	Bird Terrestrial	No
Mussel, Dwarf Wedge (<i>Alasmodonta heterodon</i>)	Endangered	Bivalve Freshwater	No
Gerardia, Sandplain (<i>Agalinis acuta</i>)	Endangered	Dicot Terrestrial	No
Sturgeon, Shortnose (<i>Acipenser brevirostrum</i>)	Endangered	Fish Saltwater, Freshwater	No
Beetle, Puritan Tiger (<i>Cicindela puritana</i>)	Threatened	Insect Terrestrial, Coastal (neritic)	No
Bat, Indiana (<i>Myotis sodalis</i>)	Endangered	Mammal Subterranean, Terrestrial	Yes
Pogonia, Small Whorled (<i>Isotria medeoloides</i>)	Threatened	Monocot Terrestrial	No

Connecticut (9) species:

Turtle, Bog (Northern population)
(*Clemmys muhlenbergii*)

Threatened

Taxa

Reptile

Critical Habitat

No

Terrestrial, Freshwater

Delaware (3) species:

Plover, Piping

(*Charadrius melodus*)

Endangered

Taxa

Bird

Critical Habitat

Yes

Terrestrial

Squirrel, Delmarva Peninsula Fox

(*Sciurus niger cinereus*)

Endangered

Mammal

No

Terrestrial

Pink, Swamp

(*Helonias bullata*)

Threatened

Monocot

No

Terrestrial, Freshwater

Florida (92) species:

Salamander, Flatwoods

(*Ambystoma cingulatum*)

Threatened

Amphibian

No

Freshwater, Vernal pool, Terrestrial

Caracara, Audubon's Crested

(*Polyborus plancus audubonii*)

Threatened

Bird

No

Terrestrial

Kite, Everglade Snail

(*Rostrhamus sociabilis plumbeus*)

Endangered

Bird

Yes

Terrestrial

Plover, Piping

(*Charadrius melodus*)

Endangered

Bird

Yes

Terrestrial

Scrub-Jay, Florida

(*Aphelocoma coerulescens*)

Threatened

Bird

No

Terrestrial

Sparrow, Cape Sable Seaside

(*Ammodramus maritimus mirabilis*)

Endangered

Bird

Yes

Terrestrial

Sparrow, Florida Grasshopper

(*Ammodramus savannarum floridanus*)

Endangered

Bird

No

Terrestrial

Stork, Wood

(*Mycteria americana*)

Endangered

Bird

No

Terrestrial

Woodpecker, Red-cockaded

(*Picoides borealis*)

Endangered

Bird

No

Terrestrial

Bankclimber, Purple

(*Elliptioideus sloatianus*)

Threatened

Bivalve

No

Freshwater

Mussel, Gulf Moccasinshell

(*Medionidus penicillatus*)

Endangered

Bivalve

No

Freshwater

Mussel, Ochlockonee Moccasinshell

(*Medionidus simpsonianus*)

Endangered

Bivalve

No

Freshwater

Mussel, Oval Pigtoe

(*Pleurobema pyriforme*)

Endangered

Bivalve

No

Freshwater

Mussel, Shiny-rayed Pocketbook

(*Lampsilis subangulata*)

Endangered

Bivalve

No

Freshwater

Slabshell, Chipola

(*Elliptio chipolaensis*)

Threatened

Bivalve

No

Freshwater

Threeridge, Fat (Mussel)

(*Amblema neislerii*)

Endangered

Bivalve

No

Freshwater

Florida

(92) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Torreya, Florida	Endangered	Conf/cycds	No
(<i>Torreya taxifolia</i>)		Terrestrial	
Shrimp, Squirrel Chimney Cave	Threatened	Crustacean	No
(<i>Palaemonetes cummingi</i>)		Freshwater, Subterranean	
Aster, Florida Golden	Endangered	Dicot	No
(<i>Chrysopsis floridana</i>)		Terrestrial	
Bellflower, Brooksville	Endangered	Dicot	No
(<i>Campanula robinsiae</i>)		Terrestrial	
Birds-in-a-nest, White	Threatened	Dicot	No
(<i>Macbridea alba</i>)		Terrestrial	
Blazing Star, Scrub	Endangered	Dicot	No
(<i>Liatris ohlingerae</i>)		Terrestrial	
Bonamia, Florida	Threatened	Dicot	No
(<i>Bonamia grandiflora</i>)		Terrestrial	
Buckwheat, Scrub	Threatened	Dicot	No
(<i>Eriogonum longifolium</i> var. <i>gnaphalifolium</i>)		Terrestrial	
Butterwort, Godfrey's	Threatened	Dicot	No
(<i>Pinguicula ionantha</i>)		Terrestrial, Freshwater	
Campion, Fringed	Endangered	Dicot	No
(<i>Silene polypetala</i>)		Terrestrial	
Chaffseed, American	Endangered	Dicot	No
(<i>Schwalbea americana</i>)		Terrestrial	
Fringe Tree, Pygmy	Endangered	Dicot	No
(<i>Chionanthus pygmaeus</i>)		Terrestrial	
Gooseberry, Miccosukee	Threatened	Dicot	No
(<i>Ribes echinellum</i>)		Terrestrial	
Gourd, Okeechobee	Endangered	Dicot	No
(<i>Cucurbita okeechobeensis</i> ssp. <i>okeechobeensis</i>)		Terrestrial	
Harebells, Avon Park	Endangered	Dicot	No
(<i>Crotalaria avonensis</i>)		Terrestrial	
Hypericum, Highlands Scrub	Endangered	Dicot	No
(<i>Hypericum cumulicola</i>)		Terrestrial	
Jacquemontia, Beach	Endangered	Dicot	No
(<i>Jacquemontia reclinata</i>)		Terrestrial, Coastal (neritic)	
Lead-plant, Crenulate	Endangered	Dicot	No
(<i>Amorpha crenulata</i>)		Terrestrial	
Lupine, Scrub	Endangered	Dicot	No
(<i>Lupinus aridorum</i>)		Terrestrial	
Meadowrue, Cooley's	Endangered	Dicot	No
(<i>Thalictrum cooleyi</i>)		Terrestrial	
Milkpea, Small's	Endangered	Dicot	No
(<i>Galactia smallii</i>)		Terrestrial	

Florida

(92) species:

			<u>Taxa</u>	<u>Critical Habitat</u>
Mint, Garrett's	Endangered		Dicot	No
(<i>Dicerandra christmanii</i>)		Terrestrial		
Mint, Lakela's	Endangered		Dicot	No
(<i>Dicerandra immaculata</i>)		Terrestrial		
Mint, Longspurred	Endangered		Dicot	No
(<i>Dicerandra cornutissima</i>)		Terrestrial		
Mint, Scrub	Endangered		Dicot	No
(<i>Dicerandra frutescens</i>)		Terrestrial		
Mustard, Carter's	Endangered		Dicot	No
(<i>Warea carteri</i>)		Terrestrial		
Pawpaw, Beautiful	Endangered		Dicot	No
(<i>Deeringothamnus pulchellus</i>)		Terrestrial		
Pawpaw, Four-petal	Endangered		Dicot	No
(<i>Asimina tetramera</i>)		Terrestrial		
Pawpaw, Rugel's	Endangered		Dicot	No
(<i>Deeringothamnus rugelii</i>)		Terrestrial		
Pinkroot, Gentian	Endangered		Dicot	No
(<i>Spigelia gentianoides</i>)		Terrestrial		
Plum, Scrub	Endangered		Dicot	No
(<i>Prunus geniculata</i>)		Terrestrial		
Polygala, Lewton's	Endangered		Dicot	No
(<i>Polygala lewtonii</i>)		Terrestrial		
Polygala, Tiny	Endangered		Dicot	No
(<i>Polygala smallii</i>)		Terrestrial		
Rhododendron, Chapman	Endangered		Dicot	No
(<i>Rhododendron chapmanii</i>)		Terrestrial		
Rosemary, Apalachicola	Endangered		Dicot	No
(<i>Conradina glabra</i>)		Terrestrial		
Rosemary, Etonia	Endangered		Dicot	No
(<i>Conradina etonia</i>)		Terrestrial		
Rosemary, Short-leaved	Endangered		Dicot	No
(<i>Conradina brevifolia</i>)		Terrestrial		
Sandlace	Endangered		Dicot	No
(<i>Polygonella myriophylla</i>)		Terrestrial		
Skullcap, Florida	Threatened		Dicot	No
(<i>Scutellaria floridana</i>)		Terrestrial		
Snakeroot	Endangered		Dicot	No
(<i>Eryngium cuneifolium</i>)		Terrestrial		
Spurge, Deltoid	Endangered		Dicot	No
(<i>Chamaesyce deltoidea</i> ssp. <i>deltoidea</i>)		Terrestrial		
Spurge, Garber's	Threatened		Dicot	No
(<i>Chamaesyce garberi</i>)		Terrestrial		

Florida

(92) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Spurge, Telephus (<i>Euphorbia telephioides</i>)	Threatened	Dicot Terrestrial	No
Warea, Wide-leaf (<i>Warea amplexifolia</i>)	Endangered	Dicot Terrestrial	No
Water-willow, Cooley's (<i>Justicia cooleyi</i>)	Endangered	Dicot Terrestrial	No
Whitlow-wort, Papery (<i>Paronychia chartacea</i>)	Threatened	Dicot Terrestrial	No
Wings, Pigeon (<i>Clitoria fragrans</i>)	Threatened	Dicot Terrestrial	No
Wireweed (<i>Polygonella basiramia</i>)	Endangered	Dicot Terrestrial	No
Ziziphus, Florida (<i>Ziziphus celata</i>)	Endangered	Dicot Terrestrial	No
Darter, Okaloosa (<i>Etheostoma okaloosae</i>)	Endangered	Fish Freshwater	No
Sawfish, Smalltooth (<i>Pristis pectinata</i>)	Endangered	Fish Saltwater, Freshwater	No
Sturgeon, Gulf (<i>Acipenser oxyrinchus desotoi</i>)	Threatened	Fish Saltwater, Freshwater	Yes
Sturgeon, Shortnose (<i>Acipenser brevirostrum</i>)	Endangered	Fish Saltwater, Freshwater	No
Butterfly, Schaus Swallowtail (<i>Heraclides aristodemus ponceanus</i>)	Endangered	Insect Terrestrial	No
Cladonia, Florida Perforate (<i>Cladonia perforata</i>)	Endangered	Lichen Terrestrial	No
Bat, Gray (<i>Myotis grisescens</i>)	Endangered	Mammal Subterranean, Terrestrial	No
Bat, Indiana (<i>Myotis sodalis</i>)	Endangered	Mammal Subterranean, Terrestrial	Yes
Mouse, Choctawhatchee Beach (<i>Peromyscus polionotus alloparys</i>)	Endangered	Mammal Coastal (neritic), Terrestrial	Yes
Mouse, Perdido Key Beach (<i>Peromyscus polionotus trissyllepsis</i>)	Endangered	Mammal Coastal (neritic)	Yes
Mouse, Southeastern Beach (<i>Peromyscus polionotus niveiventris</i>)	Threatened	Mammal Coastal (neritic), Terrestrial	No
Panther, Florida (<i>Puma (=Felis) concolor coryi</i>)	Endangered	Mammal Terrestrial	No
Vole, Florida Salt Marsh (<i>Microtus pennsylvanicus dukecampbelli</i>)	Endangered	Mammal Terrestrial, Brackish	No
Manatee, West Indian (<i>Trichechus manatus</i>)	Endangered	Marine mml Saltwater	Yes

Florida

(92) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Beargrass, Britton's (<i>Nolina brittoniana</i>)	Endangered	Monocot Terrestrial	No
Beauty, Harper's (<i>Harperocallis flava</i>)	Endangered	Monocot Freshwater, Terrestrial	No
Seagrass, Johnson's (<i>Halophila johnsonii</i>)	Threatened	Monocot Coastal (neritic), Saltwater	Yes
Crocodile, American (<i>Crocodylus acutus</i>)	Threatened	Reptile Terrestrial, Freshwater	Yes
Sea turtle, green (<i>Chelonia mydas</i>)	Endangered	Reptile Saltwater	No
Sea turtle, hawksbill (<i>Eretmochelys imbricata</i>)	Endangered	Reptile Saltwater	Yes
Sea turtle, Kemp's ridley (<i>Lepidochelys kempii</i>)	Endangered	Reptile Saltwater	No
Sea turtle, leatherback (<i>Dermochelys coriacea</i>)	Endangered	Reptile Saltwater	Yes
Sea turtle, loggerhead (<i>Caretta caretta</i>)	Threatened	Reptile Saltwater	No
Skink, Blue-tailed Mole (<i>Eumeces egregius lividus</i>)	Threatened	Reptile Terrestrial	No
Skink, Sand (<i>Neoseps reynoldsi</i>)	Threatened	Reptile Terrestrial	No
Snake, Atlantic Salt Marsh (<i>Nerodia clarkii taeniata</i>)	Threatened	Reptile Saltwater, Terrestrial, Brackish	No
Snake, Eastern Indigo (<i>Drymarchon corais couperi</i>)	Threatened	Reptile Terrestrial	No

Georgia

(56) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Salamander, Flatwoods (<i>Ambystoma cingulatum</i>)	Threatened	Amphibian Freshwater, Vernal pool, Terrestrial	No
Plover, Piping (<i>Charadrius melodus</i>)	Endangered	Bird Terrestrial	Yes
Stork, Wood (<i>Mycteria americana</i>)	Endangered	Bird Terrestrial	No
Warbler (=Wood), Kirtland's (<i>Dendroica kirtlandii</i>)	Endangered	Bird Terrestrial	No
Woodpecker, Red-cockaded (<i>Picoides borealis</i>)	Endangered	Bird Terrestrial	No
Bankclimber, Purple (<i>Elliptioideus sloatianus</i>)	Threatened	Bivalve Freshwater	No
Combshell, Upland (<i>Epioblasma metastrata</i>)	Endangered	Bivalve Freshwater	Yes
Fanshell (<i>Cyprogenia stegaria</i>)	Endangered	Bivalve Freshwater	No

Georgia

(56) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Kidneyshell, Triangular (<i>Ptychobranthus greenii</i>)	Endangered	Bivalve Freshwater	Yes
Mucket, Pink (Pearlymussel) (<i>Lampsilis abrupta</i>)	Endangered	Bivalve Freshwater	No
Mussel, Acornshell Southern (<i>Epioblasma othcaloogensis</i>)	Endangered	Bivalve Freshwater	Yes
Mussel, Alabama Moccasinshell (<i>Medionidus acutissimus</i>)	Threatened	Bivalve Freshwater	Yes
Mussel, Coosa Moccasinshell (<i>Medionidus parvulus</i>)	Endangered	Bivalve Freshwater	Yes
Mussel, Fine-lined Pocketbook (<i>Lampsilis altilis</i>)	Threatened	Bivalve Freshwater	Yes
Mussel, Gulf Moccasinshell (<i>Medionidus penicillatus</i>)	Endangered	Bivalve Freshwater	No
Mussel, Oval Pigtoe (<i>Pleurobema pyriforme</i>)	Endangered	Bivalve Freshwater	No
Mussel, Ovate Clubshell (<i>Pleurobema perovatatum</i>)	Endangered	Bivalve Freshwater	Yes
Mussel, Shiny-rayed Pocketbook (<i>Lampsilis subangulata</i>)	Endangered	Bivalve Freshwater	No
Mussel, Southern Clubshell (<i>Pleurobema decisum</i>)	Endangered	Bivalve Freshwater	Yes
Mussel, Southern Pigtoe (<i>Pleurobema georgianum</i>)	Endangered	Bivalve Freshwater	Yes
Threeridge, Fat (Mussel) (<i>Amblema neislerii</i>)	Endangered	Bivalve Freshwater	No
Torreyia, Florida (<i>Torreyia taxifolia</i>)	Endangered	Conf/cycds Terrestrial	No
Amphianthus, Little (<i>Amphianthus pusillus</i>)	Threatened	Dicot Freshwater	No
Barbara Buttons, Mohr's (<i>Marshallia mohrii</i>)	Threatened	Dicot Terrestrial	No
Campion, Fringed (<i>Silene polypetala</i>)	Endangered	Dicot Terrestrial	No
Dropwort, Canby's (<i>Oxypolis canbyi</i>)	Endangered	Dicot Terrestrial, Freshwater	No
Harperella (<i>Ptilimnium nodosum</i>)	Endangered	Dicot Freshwater	No
Pitcher-plant, Green (<i>Sarracenia oreophila</i>)	Endangered	Dicot Terrestrial, Freshwater	No
Pondberry (<i>Lindera melissifolia</i>)	Endangered	Dicot Terrestrial	No

Georgia

(56) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Rattleweed, Hairy	Endangered	Dicot	No
(<i>Baptisia arachnifera</i>)		Terrestrial	
Skullcap, Large-flowered	Threatened	Dicot	No
(<i>Scutellaria montana</i>)		Terrestrial	
Spiraea, Virginia	Threatened	Dicot	No
(<i>Spiraea virginiana</i>)		Terrestrial	
Sumac, Michaux's	Endangered	Dicot	No
(<i>Rhus michauxii</i>)		Terrestrial	
Quillwort, Black-spored	Endangered	Ferns	No
(<i>Isoetes melanospora</i>)		Vernal pool	
Quillwort, Mat-forming	Endangered	Ferns	No
(<i>Isoetes tegetiformans</i>)		Vernal pool	
Darter, Amber	Endangered	Fish	Yes
(<i>Percina antesella</i>)		Freshwater	
Darter, Cherokee	Threatened	Fish	No
(<i>Etheostoma scotti</i>)		Freshwater	
Darter, Etowah	Endangered	Fish	No
(<i>Etheostoma etowahae</i>)		Freshwater	
Darter, Goldline	Threatened	Fish	No
(<i>Percina aurolineata</i>)		Freshwater	
Logperch, Conasauga	Endangered	Fish	Yes
(<i>Percina jenkinsi</i>)		Freshwater	
Shiner, Blue	Threatened	Fish	No
(<i>Cyprinella caerulea</i>)		Freshwater	
Sturgeon, Gulf	Threatened	Fish	Yes
(<i>Acipenser oxyrinchus desotoi</i>)		Saltwater, Freshwater	
Sturgeon, Shortnose	Endangered	Fish	No
(<i>Acipenser brevirostrum</i>)		Saltwater, Freshwater	
Beetle, American Burying	Endangered	Insect	No
(<i>Nicrophorus americanus</i>)		Terrestrial	
Bat, Gray	Endangered	Mammal	No
(<i>Myotis grisescens</i>)		Subterraneous, Terrestrial	
Bat, Indiana	Endangered	Mammal	Yes
(<i>Myotis sodalis</i>)		Subterraneous, Terrestrial	
Bat, Virginia Big-eared	Endangered	Mammal	Yes
(<i>Corynorhinus (=Plecotus) townsendii virginianus</i>)		Terrestrial, Subterraneous	
Manatee, West Indian	Endangered	Marine mml	Yes
(<i>Trichechus manatus</i>)		Saltwater	
Grass, Tennessee Yellow-eyed	Endangered	Monocot	No
(<i>Xyris tennesseensis</i>)		Terrestrial	
Pink, Swamp	Threatened	Monocot	No
(<i>Helonias bullata</i>)		Terrestrial, Freshwater	

Georgia

(56) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Pogonia, Small Whorled (<i>Isotria medeoloides</i>)	Threatened	Monocot Terrestrial	No
Trillium, Persistent (<i>Trillium persistens</i>)	Endangered	Monocot Terrestrial	No
Trillium, Relict (<i>Trillium reliquum</i>)	Endangered	Monocot Terrestrial	No
Water-plantain, Kral's (<i>Sagittaria secundifolia</i>)	Threatened	Monocot Freshwater	No
Sea turtle, loggerhead (<i>Caretta caretta</i>)	Threatened	Reptile Saltwater	No
Snake, Eastern Indigo (<i>Drymarchon corais couperi</i>)	Threatened	Reptile Terrestrial	No

Hawaii

(375) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Spider, Kauai Cave Wolf (<i>Adelocosa anops</i>)	Endangered	Arachnid Terrestrial, Subterraneous	Yes
'Akepa, Hawaii (<i>Loxops coccineus coccineus</i>)	Endangered	Bird Terrestrial	No
'Akepa, Maui (<i>Loxops coccineus ochraceus</i>)	Endangered	Bird Terrestrial	No
'Akia Loa, Kauai (Hemignathus procerus) (<i>Hemignathus procerus</i>)	Endangered	Bird Terrestrial	No
'Akia Pola'au (Hemignathus munroi) (<i>Hemignathus munroi</i>)	Endangered	Bird Terrestrial	No
Albatross, Short-tailed (<i>Phoebastria (=Diomedea) albatrus</i>)	Endangered	Bird Terrestrial, Saltwater	No
Coot, Hawaiian (=Alae keo keo) (<i>Fulica americana alai</i>)	Endangered	Bird Terrestrial	No
Creeper, Hawaii (<i>Oreomystis mana</i>)	Endangered	Bird Terrestrial	No
Creeper, Molokai (Kakawahie) (<i>Paroreomyza flammea</i>)	Endangered	Bird Terrestrial	No
Creeper, Oahu (Alauwahio) (<i>Paroreomyza maculata</i>)	Endangered	Bird Terrestrial	No
Crow, Hawaiian ('Alala) (<i>Corvus hawaiiensis</i>)	Endangered	Bird Terrestrial	No
Duck, Hawaiian (Koloa) (<i>Anas wyvilliana</i>)	Endangered	Bird Freshwater, Terrestrial	No
Duck, Laysan (<i>Anas laysanensis</i>)	Endangered	Bird Terrestrial, Freshwater	No
Elepaio, Oahu (<i>Chasiempis sandwichensis ibidis</i>)	Endangered	Bird Terrestrial	Yes
Finch, Laysan (<i>Telespyza cantans</i>)	Endangered	Bird Terrestrial	No

Hawaii

(375) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Finch, Nihoa	Endangered	Bird	No
(<i>Telespyza ultima</i>)		Terrestrial	
Goose, Hawaiian (Nene)	Endangered	Bird	No
(<i>Branta (=Nesochen) sandvicensis</i>)		Terrestrial, Freshwater	
Hawk, Hawaiian (Io)	Endangered	Bird	No
(<i>Buteo solitarius</i>)		Terrestrial	
Honeycreeper, Crested ('Akohekohe)	Endangered	Bird	No
(<i>Palmeria dolei</i>)		Terrestrial	
Kauai creeper	Endangered	Bird	No
(<i>Oreomystis bairdi</i>)		Terrestrial	
Millerbird, Nihoa	Endangered	Bird	No
(<i>Acrocephalus familiaris kingi</i>)		Terrestrial	
Moorhen, Hawaiian Common	Endangered	Bird	No
(<i>Gallinula chloropus sandvicensis</i>)		Terrestrial	
Nuku Pu'u	Endangered	Bird	No
(<i>Hemignathus lucidus</i>)		Terrestrial	
'O'o, Kauai (= 'A'a)	Endangered	Bird	No
(<i>Moho braccatus</i>)		Terrestrial	
'O'u (Honeycreeper)	Endangered	Bird	No
(<i>Psittirostra psittacea</i>)		Terrestrial	
Palila	Endangered	Bird	Yes
(<i>Loxioides bailleui</i>)		Terrestrial	
Parrotbill, Maui	Endangered	Bird	No
(<i>Pseudonestor xanthophrys</i>)		Terrestrial	
Petrel, Hawaiian Dark-rumped	Endangered	Bird	No
(<i>Pterodroma phaeopygia sandwichensis</i>)		Terrestrial	
Po'ouli	Endangered	Bird	No
(<i>Melamprosops phaeosoma</i>)		Terrestrial	
Shearwater, Newell's Townsend's	Threatened	Bird	No
(<i>Puffinus auricularis newelli</i>)		Terrestrial, Saltwater	
Stilt, Hawaiian (=Ae'o)	Endangered	Bird	No
(<i>Himantopus mexicanus knudseni</i>)		Terrestrial	
Thrush, Large Kauai	Endangered	Bird	No
(<i>Myadestes myadestinus</i>)		Terrestrial	
Thrush, Molokai (Oloma'o)	Endangered	Bird	No
(<i>Myadestes lanaiensis rutha</i>)		Terrestrial	
Thrush, Small Kauai (Puaiohi)	Endangered	Bird	No
(<i>Myadestes palmeri</i>)		Terrestrial	
Amphipod, Kauai Cave	Endangered	Crustacean	Yes
(<i>Spelaeorchestia koloana</i>)		Freshwater, Subterranean	
(ncn)	Endangered	Dicot	No
(<i>Keysseria erici</i>)		Terrestrial	

Hawaii

(375) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
(ncn)	Endangered	Dicot	No
(<i>Stenogyne kealiae</i>)		Terrestrial	
(ncn)	Endangered	Dicot	No
(<i>Keysseria helenae</i>)		Terrestrial	
(ncn)	Endangered	Dicot	No
(<i>Schiedea attenuata</i>)		Terrestrial	
Abutilon eremitopetalum (ncn)	Endangered	Dicot	Yes
(<i>Abutilon eremitopetalum</i>)		Terrestrial	
Abutilon sandwicense (ncn)	Endangered	Dicot	Yes
(<i>Abutilon sandwicense</i>)		Terrestrial	
Achyranthes mutica (ncn)	Endangered	Dicot	Yes
(<i>Achyranthes mutica</i>)		Terrestrial	
Achyranthes splendens var. rotundata (ncn)	Endangered	Dicot	No
(<i>Achyranthes splendens var. rotundata</i>)		Terrestrial	
A'e (Zanthoxylum dipetalum var. tomentosum)	Endangered	Dicot	Yes
(<i>Zanthoxylum dipetalum var. tomentosum</i>)		Terrestrial	
A'e (Zanthoxylum hawaiiense)	Endangered	Dicot	Yes
(<i>Zanthoxylum hawaiiense</i>)		Terrestrial	
'Aiea (Nothocestrum breviflorum)	Endangered	Dicot	Yes
(<i>Nothocestrum breviflorum</i>)		Terrestrial	
'Aiea (Nothocestrum peltatum)	Endangered	Dicot	Yes
(<i>Nothocestrum peltatum</i>)		Terrestrial	
Akoko	Endangered	Dicot	No
(<i>Chamaesyce remyi var. kauaiensis</i>)		Terrestrial	
'akoko	Endangered	Dicot	No
(<i>Chamaesyce eleanoriae</i>)		Terrestrial	
'Akoko (Chamaesyce celastroides var. kaenana)	Endangered	Dicot	Yes
(<i>Chamaesyce celastroides var. kaenana</i>)		Terrestrial	
'Akoko (Chamaesyce deppeana)	Endangered	Dicot	Yes
(<i>Chamaesyce deppeana</i>)		Terrestrial	
'Akoko (Chamaesyce herbstii)	Endangered	Dicot	Yes
(<i>Chamaesyce herbstii</i>)		Terrestrial	
'Akoko (Chamaesyce kuwaleana)	Endangered	Dicot	Yes
(<i>Chamaesyce kuwaleana</i>)		Terrestrial	
'Akoko (Chamaesyce rockii)	Endangered	Dicot	Yes
(<i>Chamaesyce rockii</i>)		Terrestrial	
'Akoko (Chamaesyce skottsbergii var. skottsbe)	Endangered	Dicot	No
(<i>Chamaesyce skottsbergii var. kalaeloana</i>)		Terrestrial	
'Akoko (Euphorbia haeleeleana)	Endangered	Dicot	Yes
(<i>Euphorbia haeleeleana</i>)		Terrestrial	
alani	Endangered	Dicot	No
(<i>Melicope puberula</i>)		Terrestrial	

Hawaii

(375) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
alani	Endangered	Dicot	No
(<i>Melicope degeneri</i>)		Terrestrial	
alani	Endangered	Dicot	No
(<i>Melicope paniculata</i>)		Terrestrial	
Alani (<i>Melicope adscendens</i>)	Endangered	Dicot	Yes
(<i>Melicope adscendens</i>)		Terrestrial	
Alani (<i>Melicope balloui</i>)	Endangered	Dicot	Yes
(<i>Melicope balloui</i>)		Terrestrial	
Alani (<i>Melicope haupuensis</i>)	Endangered	Dicot	Yes
(<i>Melicope haupuensis</i>)		Terrestrial	
Alani (<i>Melicope knudsenii</i>)	Endangered	Dicot	Yes
(<i>Melicope knudsenii</i>)		Terrestrial	
Alani (<i>Melicope lydgatei</i>)	Endangered	Dicot	Yes
(<i>Melicope lydgatei</i>)		Terrestrial	
Alani (<i>Melicope mucronulata</i>)	Endangered	Dicot	Yes
(<i>Melicope mucronulata</i>)		Terrestrial	
Alani (<i>Melicope munroi</i>)	Endangered	Dicot	No
(<i>Melicope munroi</i>)		Terrestrial	
Alani (<i>Melicope ovalis</i>)	Endangered	Dicot	Yes
(<i>Melicope ovalis</i>)		Terrestrial	
Alani (<i>Melicope pallida</i>)	Endangered	Dicot	Yes
(<i>Melicope pallida</i>)		Terrestrial	
Alani (<i>Melicope quadrangularis</i>)	Endangered	Dicot	No
(<i>Melicope quadrangularis</i>)		Terrestrial	
Alani (<i>Melicope reflexa</i>)	Endangered	Dicot	Yes
(<i>Melicope reflexa</i>)		Terrestrial	
Alani (<i>Melicope saint-johnii</i>)	Endangered	Dicot	Yes
(<i>Melicope saint-johnii</i>)		Terrestrial	
Alani (<i>Melicope zahlbruckneri</i>)	Endangered	Dicot	Yes
(<i>Melicope zahlbruckneri</i>)		Terrestrial	
Alsinidendron obovatum (ncn)	Endangered	Dicot	Yes
(<i>Alsinidendron obovatum</i>)		Terrestrial	
Alsinidendron trinerve (ncn)	Endangered	Dicot	Yes
(<i>Alsinidendron trinerve</i>)		Terrestrial	
Alsinidendron viscosum (ncn)	Endangered	Dicot	Yes
(<i>Alsinidendron viscosum</i>)		Terrestrial	
Amaranthus brownii (ncn)	Endangered	Dicot	Yes
(<i>Amaranthus brownii</i>)		Terrestrial	
'Anaunau (<i>Lepidium arbuscula</i>)	Endangered	Dicot	Yes
(<i>Lepidium arbuscula</i>)		Terrestrial	
'Anunu (<i>Sicyos alba</i>)	Endangered	Dicot	Yes
(<i>Sicyos alba</i>)		Terrestrial	

Hawaii

(375) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Aupaka (Isodendron hosakae)	Endangered	Dicot	Yes
(<i>Isodendron hosakae</i>)		Terrestrial	
Aupaka (Isodendron laurifolium)	Endangered	Dicot	Yes
(<i>Isodendron laurifolium</i>)		Terrestrial	
Aupaka (Isodendron longifolium)	Threatened	Dicot	Yes
(<i>Isodendron longifolium</i>)		Terrestrial	
awikiwiki	Endangered	Dicot	No
(<i>Canavalia napaliensis</i>)		Terrestrial	
'Awikiwiki (Canavalia molokaiensis)	Endangered	Dicot	Yes
(<i>Canavalia molokaiensis</i>)		Terrestrial	
'Awiwi (Centaurium sebaeoides)	Endangered	Dicot	Yes
(<i>Centaurium sebaeoides</i>)		Terrestrial	
'Awiwi (Hedyotis cookiana)	Endangered	Dicot	Yes
(<i>Hedyotis cookiana</i>)		Terrestrial	
Bonamia menziesii (ncn)	Endangered	Dicot	Yes
(<i>Bonamia menziesii</i>)		Terrestrial	
Chamaesyce Halemanui (ncn)	Endangered	Dicot	Yes
(<i>Chamaesyce halemanui</i>)		Terrestrial	
Cyanea undulata (ncn)	Endangered	Dicot	Yes
(<i>Cyanea undulata</i>)		Terrestrial	
Delissea rhytidisperma (ncn)	Endangered	Dicot	Yes
(<i>Delissea rhytidisperma</i>)		Terrestrial	
Dubautia latifolia (ncn)	Endangered	Dicot	Yes
(<i>Dubautia latifolia</i>)		Terrestrial	
Dubautia pauciflora (ncn)	Endangered	Dicot	Yes
(<i>Dubautia pauciflora</i>)		Terrestrial	
Geranium, Hawaiian Red-flowered	Endangered	Dicot	Yes
(<i>Geranium arboreum</i>)		Terrestrial	
Gouania hillebrandii (ncn)	Endangered	Dicot	Yes
(<i>Gouania hillebrandii</i>)		Terrestrial	
Gouania meyenii (ncn)	Endangered	Dicot	Yes
(<i>Gouania meyenii</i>)		Terrestrial	
Gouania vitifolia (ncn)	Endangered	Dicot	Yes
(<i>Gouania vitifolia</i>)		Terrestrial	
haha	Endangered	Dicot	No
(<i>Cyanea eleeleensis</i>)		Terrestrial	
Haha	Endangered	Dicot	No
(<i>Cyanea kuhihewa</i>)		Terrestrial	
Haha (Cyanea acuminata)	Endangered	Dicot	Yes
(<i>Cyanea acuminata</i>)		Terrestrial	
Haha (Cyanea asarifolia)	Endangered	Dicot	Yes
(<i>Cyanea asarifolia</i>)		Terrestrial	

Hawaii

(375) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Haha (Cyanea copelandii ssp. copelandii)	Endangered	Dicot	No
(<i>Cyanea copelandii</i> ssp. <i>copelandii</i>)		Terrestrial	
Haha (Cyanea copelandii ssp. haleakalaensis)	Endangered	Dicot	Yes
(<i>Cyanea copelandii</i> ssp. <i>haleakalaensis</i>)		Terrestrial	
Haha (Cyanea Crispa) (=Rollandia crispa)	Endangered	Dicot	Yes
(<i>Cyanea</i> (=Rollandia) <i>crispa</i>)		Terrestrial	
Haha (Cyanea dunbarii)	Endangered	Dicot	Yes
(<i>Cyanea dunbarii</i>)		Terrestrial	
Haha (Cyanea glabra)	Endangered	Dicot	Yes
(<i>Cyanea glabra</i>)		Terrestrial	
Haha (Cyanea grimesiana ssp. grimesiana)	Endangered	Dicot	Yes
(<i>Cyanea grimesiana</i> ssp. <i>grimesiana</i>)		Terrestrial	
Haha (Cyanea grimesiana ssp. obatae)	Endangered	Dicot	Yes
(<i>Cyanea grimesiana</i> ssp. <i>obatae</i>)		Terrestrial	
Haha (Cyanea hamatiflora ssp. carlsonii)	Endangered	Dicot	Yes
(<i>Cyanea hamatiflora carlsonii</i>)		Terrestrial	
Haha (Cyanea hamatiflora ssp. hamatiflora)	Endangered	Dicot	Yes
(<i>Cyanea hamatiflora</i> ssp. <i>hamatiflora</i>)		Terrestrial	
Haha (Cyanea humboldtiana)	Endangered	Dicot	Yes
(<i>Cyanea humboldtiana</i>)		Terrestrial	
Haha (Cyanea koolauensis)	Endangered	Dicot	Yes
(<i>Cyanea koolauensis</i>)		Terrestrial	
Haha (Cyanea longiflora)	Endangered	Dicot	Yes
(<i>Cyanea longiflora</i>)		Terrestrial	
Haha (Cyanea Macrostegia var. gibsonii)	Endangered	Dicot	No
(<i>Cyanea macrostegia</i> ssp. <i>gibsonii</i>)		Terrestrial	
Haha (Cyanea mannii)	Endangered	Dicot	Yes
(<i>Cyanea mannii</i>)		Terrestrial	
Haha (Cyanea mceldowneyi)	Endangered	Dicot	Yes
(<i>Cyanea mceldowneyi</i>)		Terrestrial	
Haha (Cyanea pinnatifida)	Endangered	Dicot	Yes
(<i>Cyanea pinnatifida</i>)		Terrestrial	
Haha (Cyanea platyphylla)	Endangered	Dicot	Yes
(<i>Cyanea platyphylla</i>)		Terrestrial	
Haha (Cyanea procera)	Endangered	Dicot	Yes
(<i>Cyanea procera</i>)		Terrestrial	
Haha (Cyanea recta)	Threatened	Dicot	Yes
(<i>Cyanea recta</i>)		Terrestrial	
Haha (Cyanea remyi)	Endangered	Dicot	Yes
(<i>Cyanea remyi</i>)		Terrestrial	
Haha (Cyanea shipmanii)	Endangered	Dicot	Yes
(<i>Cyanea shipmannii</i>)		Terrestrial	

Hawaii

(375) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Haha (<i>Cyanea stictophylla</i>)	Endangered	Dicot	Yes
(<i>Cyanea stictophylla</i>)		Terrestrial	
Haha (<i>Cyanea St-Johnii</i>) (=Rollandia St-Johnii)	Endangered	Dicot	Yes
(<i>Cyanea st-johnii</i>)		Terrestrial	
Haha (<i>Cyanea superba</i>)	Endangered	Dicot	Yes
(<i>Cyanea superba</i>)		Terrestrial	
Ha'lwale (<i>Cyrtandra crenata</i>)	Endangered	Dicot	No
(<i>Cyrtandra crenata</i>)		Terrestrial	
Ha'lwale (<i>Cyrtandra dentata</i>)	Endangered	Dicot	Yes
(<i>Cyrtandra dentata</i>)		Terrestrial	
Ha'lwale (<i>Cyrtandra giffardii</i>)	Endangered	Dicot	Yes
(<i>Cyrtandra giffardii</i>)		Terrestrial	
Ha'lwale (<i>Cyrtandra limahuliensis</i>)	Threatened	Dicot	Yes
(<i>Cyrtandra limahuliensis</i>)		Terrestrial	
Ha'lwale (<i>Cyrtandra munroi</i>)	Endangered	Dicot	Yes
(<i>Cyrtandra munroi</i>)		Terrestrial	
Ha'lwale (<i>Cyrtandra polyantha</i>)	Endangered	Dicot	Yes
(<i>Cyrtandra polyantha</i>)		Terrestrial	
Ha'lwale (<i>Cyrtandra subumbellata</i>)	Endangered	Dicot	Yes
(<i>Cyrtandra subumbellata</i>)		Terrestrial	
Ha'lwale (<i>Cyrtandra tintinnabula</i>)	Endangered	Dicot	Yes
(<i>Cyrtandra tintinnabula</i>)		Terrestrial	
Ha'lwale (<i>Cyrtandra viridiflora</i>)	Endangered	Dicot	Yes
(<i>Cyrtandra viridiflora</i>)		Terrestrial	
Haplostachys Haplostachya (ncn)	Endangered	Dicot	No
(<i>Haplostachys haplostachya</i>)		Terrestrial	
Hau Kauhiwi (<i>Hibiscadelphus woodii</i>)	Endangered	Dicot	Yes
(<i>Hibiscadelphus woodii</i>)		Terrestrial	
Hau Kuahiwi (<i>Hibiscadelphus distans</i>)	Endangered	Dicot	No
(<i>Hibiscadelphus distans</i>)		Terrestrial	
Heau (<i>Exocarpos luteolus</i>)	Endangered	Dicot	Yes
(<i>Exocarpos luteolus</i>)		Terrestrial	
Hedyotis degeneri (ncn)	Endangered	Dicot	Yes
(<i>Hedyotis degeneri</i>)		Terrestrial	
Hedyotis parvula (ncn)	Endangered	Dicot	Yes
(<i>Hedyotis parvula</i>)		Terrestrial	
Hedyotis St.-Johnii (ncn)	Endangered	Dicot	Yes
(<i>Hedyotis st.-johnii</i>)		Terrestrial	
Hesperomannia arborescens (ncn)	Endangered	Dicot	Yes
(<i>Hesperomannia arborescens</i>)		Terrestrial	
Hesperomannia arbuscula (ncn)	Endangered	Dicot	Yes
(<i>Hesperomannia arbuscula</i>)		Terrestrial	

Hawaii

(375) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Hesperomannia lydgatei (ncn)	Endangered	Dicot	Yes
(<i>Hesperomannia lydgatei</i>)		Terrestrial	
Hibiscus, Clay's	Endangered	Dicot	Yes
(<i>Hibiscus clayi</i>)		Terrestrial	
Hiiwale	Endangered	Dicot	No
(<i>Cyrtandra oenobarba</i>)		Terrestrial	
ho'awa	Endangered	Dicot	No
(<i>Pittosporum napaliense</i>)		Terrestrial	
Holei (Ochrosia kilaueaensis)	Endangered	Dicot	No
(<i>Ochrosia kilaueaensis</i>)		Terrestrial	
Iliau (Wilkesia hobbdi)	Endangered	Dicot	Yes
(<i>Wilkesia hobbdi</i>)		Terrestrial	
kamakahala	Endangered	Dicot	No
(<i>Labordia helleri</i>)		Terrestrial	
kamakahala	Endangered	Dicot	No
(<i>Labordia pumila</i>)		Terrestrial	
Kamakahala (Labordia cyrtandrae)	Endangered	Dicot	Yes
(<i>Labordia cyrtandrae</i>)		Terrestrial	
Kamakahala (Labordia lydgatei)	Endangered	Dicot	Yes
(<i>Labordia lydgatei</i>)		Terrestrial	
Kamakahala (Labordia tinifolia var. lanaiensis)	Endangered	Dicot	No
(<i>Labordia tinifolia var. lanaiensis</i>)		Terrestrial	
Kamakahala (Labordia tinifolia var. wahiawaen)	Endangered	Dicot	Yes
(<i>Labordia tinifolia var. wahiawaensis</i>)		Terrestrial	
Kamakahala (Labordia triflora)	Endangered	Dicot	No
(<i>Labordia triflora</i>)		Terrestrial	
Kanaloa kahoolawensis (ncn)	Endangered	Dicot	Yes
(<i>Kanaloa kahoolawensis</i>)		Terrestrial	
Kauila (Colubrina oppositifolia)	Endangered	Dicot	Yes
(<i>Colubrina oppositifolia</i>)		Terrestrial	
Kaulu (Pteralyxia kauaiensis)	Endangered	Dicot	Yes
(<i>Pteralyxia kauaiensis</i>)		Terrestrial	
Kio'Ele (Hedyotis coriacea)	Endangered	Dicot	Yes
(<i>Hedyotis coriacea</i>)		Terrestrial	
Kiponapona (Phyllostegia racemosa)	Endangered	Dicot	Yes
(<i>Phyllostegia racemosa</i>)		Terrestrial	
Koki'o (Kokia drynarioides)	Endangered	Dicot	Yes
(<i>Kokia drynarioides</i>)		Terrestrial	
Koki'o (Kokia kauaiensis)	Endangered	Dicot	Yes
(<i>Kokia kauaiensis</i>)		Terrestrial	
Koki'o Ke'oke'o (Hibiscus arnottianus ssp. immaculatus)	Endangered	Dicot	Yes
(<i>Hibiscus arnottianus ssp. immaculatus</i>)		Terrestrial	

Hawaii

(375) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Koki'o Ke'oke'o (<i>Hibiscus waimeae</i> ssp. <i>hannerae</i>)	Endangered	Dicot	Yes
(<i>Hibiscus waimeae</i> ssp. <i>hannerae</i>)		Terrestrial	
kolea	Endangered	Dicot	No
(<i>Myrsine mezii</i>)		Terrestrial	
Kolea (<i>Myrsine juddii</i>)	Endangered	Dicot	Yes
(<i>Myrsine juddii</i>)		Terrestrial	
Kolea (<i>Myrsine linearifolia</i>)	Threatened	Dicot	Yes
(<i>Myrsine linearifolia</i>)		Terrestrial	
Ko'oko'olau (<i>Bidens micrantha</i> ssp. <i>kalealaha</i>)	Endangered	Dicot	Yes
(<i>Bidens micrantha</i> ssp. <i>kalealaha</i>)		Terrestrial	
Ko'oko'olau (<i>Bidens wiebkei</i>)	Endangered	Dicot	Yes
(<i>Bidens wiebkei</i>)		Terrestrial	
Ko'oloa'ula (<i>Abutilon menziesii</i>)	Endangered	Dicot	No
(<i>Abutilon menziesii</i>)		Terrestrial	
Kopa (<i>Hedyotis schlechtendahliana</i> var. <i>remyi</i>)	Endangered	Dicot	No
(<i>Hedyotis schlechtendahliana</i> var. <i>remyi</i>)		Terrestrial	
kopiko	Endangered	Dicot	No
(<i>Psychotria hobdyi</i>)		Terrestrial	
kopiko	Endangered	Dicot	No
(<i>Psychotria grandiflora</i>)		Terrestrial	
Kuawawaenohu (<i>Alsinidendron lychnoides</i>)	Endangered	Dicot	Yes
(<i>Alsinidendron lychnoides</i>)		Terrestrial	
Kulu'l (<i>Nototrichium humile</i>)	Endangered	Dicot	Yes
(<i>Nototrichium humile</i>)		Terrestrial	
Laukahi Kuahiwi (<i>Plantago hawaiiensis</i>)	Endangered	Dicot	Yes
(<i>Plantago hawaiiensis</i>)		Terrestrial	
Laukahi Kuahiwi (<i>Plantago princeps</i>)	Endangered	Dicot	Yes
(<i>Plantago princeps</i>)		Terrestrial	
Laulihilihi (<i>Schiedea stellarioides</i>)	Endangered	Dicot	Yes
(<i>Schiedea stellarioides</i>)		Terrestrial	
lehua makano	Endangered	Dicot	No
(<i>Lysimachia daphnoides</i>)		Terrestrial	
Lipochaeta venosa (ncn)	Endangered	Dicot	No
(<i>Lipochaeta venosa</i>)		Terrestrial	
Lobelia monostachya (ncn)	Endangered	Dicot	Yes
(<i>Lobelia monostachya</i>)		Terrestrial	
Lobelia niihauensis (ncn)	Endangered	Dicot	Yes
(<i>Lobelia niihauensis</i>)		Terrestrial	
Lobelia oahuensis (ncn)	Endangered	Dicot	Yes
(<i>Lobelia oahuensis</i>)		Terrestrial	
Lysimachia filifolia (ncn)	Endangered	Dicot	Yes
(<i>Lysimachia filifolia</i>)		Terrestrial	

Hawaii

(375) species:

			<u>Taxa</u>	<u>Critical Habitat</u>
Lysimachia lydgatei (ncn)	Endangered		Dicot	Yes
(<i>Lysimachia lydgatei</i>)		Terrestrial		
Lysimachia maxima (ncn)	Endangered		Dicot	Yes
(<i>Lysimachia maxima</i>)		Terrestrial		
Mahoe (Alectryon macrococcus)	Endangered		Dicot	Yes
(<i>Alectryon macrococcus</i>)		Terrestrial		
Makou (Peucedanum sandwicense)	Threatened		Dicot	Yes
(<i>Peucedanum sandwicense</i>)		Terrestrial		
Ma'o Hau Hele (Hibiscus brackenridgei)	Endangered		Dicot	Yes
(<i>Hibiscus brackenridgei</i>)		Terrestrial		
Ma'oli'oli (Schiedea apokremnos)	Endangered		Dicot	Yes
(<i>Schiedea apokremnos</i>)		Terrestrial		
Ma'oli'oli (Schiedea kealiae)	Endangered		Dicot	Yes
(<i>Schiedea kealiae</i>)		Terrestrial		
Mapele (Cyrtandra cyaneoides)	Endangered		Dicot	Yes
(<i>Cyrtandra cyaneoides</i>)		Terrestrial		
Mehamehame (Flueggea neowawraea)	Endangered		Dicot	Yes
(<i>Flueggea neowawraea</i>)		Terrestrial		
Munroidendron racemosum (ncn)	Endangered		Dicot	Yes
(<i>Munroidendron racemosum</i>)		Terrestrial		
na'ena'e	Endangered		Dicot	No
(<i>Dubautia imbricata imbricata</i>)		Terrestrial		
na'ena'e	Endangered		Dicot	No
(<i>Dubautia plantaginea magnifolia</i>)		Terrestrial		
Na'ena'e	Endangered		Dicot	No
(<i>Dubautia waialealae</i>)		Terrestrial		
Na'ena'e (Dubautia herbstobatae)	Endangered		Dicot	Yes
(<i>Dubautia herbstobatae</i>)		Terrestrial		
Na'ena'e (Dubautia plantaginea ssp. humilis)	Endangered		Dicot	Yes
(<i>Dubautia plantaginea ssp. humilis</i>)		Terrestrial		
Nani Wai'ale'ale (Viola kauaensis var. wahiawaensis)	Endangered		Dicot	Yes
(<i>Viola kauaensis var. wahiawaensis</i>)		Terrestrial		
Nanu (Gardenia mannii)	Endangered		Dicot	Yes
(<i>Gardenia mannii</i>)		Terrestrial		
Na'u (Gardenia brighamii)	Endangered		Dicot	No
(<i>Gardenia brighamii</i>)		Terrestrial		
Naupaka, Dwarf (Scaevola coriacea)	Endangered		Dicot	No
(<i>Scaevola coriacea</i>)		Terrestrial		
Nehe (Lipochaeta fauriei)	Endangered		Dicot	Yes
(<i>Lipochaeta fauriei</i>)		Terrestrial		
Nehe (Lipochaeta kamolensis)	Endangered		Dicot	Yes
(<i>Lipochaeta kamolensis</i>)		Terrestrial		

Hawaii

(375) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Nehe (<i>Lipochaeta lobata</i> var. <i>leptophylla</i>)	Endangered	Dicot	Yes
(<i>Lipochaeta lobata</i> var. <i>leptophylla</i>)		Terrestrial	
Nehe (<i>Lipochaeta micrantha</i>)	Endangered	Dicot	Yes
(<i>Lipochaeta micrantha</i>)		Terrestrial	
Nehe (<i>Lipochaeta tenuifolia</i>)	Endangered	Dicot	Yes
(<i>Lipochaeta tenuifolia</i>)		Terrestrial	
Nehe (<i>Lipochaeta waimeaensis</i>)	Endangered	Dicot	Yes
(<i>Lipochaeta waimeaensis</i>)		Terrestrial	
Neraudia angulata (ncn)	Endangered	Dicot	Yes
(<i>Neraudia angulata</i>)		Terrestrial	
Neraudia ovata (ncn)	Endangered	Dicot	Yes
(<i>Neraudia ovata</i>)		Terrestrial	
Neraudia sericea (ncn)	Endangered	Dicot	Yes
(<i>Neraudia sericea</i>)		Terrestrial	
Nioi (<i>Eugenia koolauensis</i>)	Endangered	Dicot	Yes
(<i>Eugenia koolauensis</i>)		Terrestrial	
nohoanu	Endangered	Dicot	No
(<i>Geranium kauaiense</i>)		Terrestrial	
Nohoanu (<i>Geranium multiflorum</i>)	Endangered	Dicot	Yes
(<i>Geranium multiflorum</i>)		Terrestrial	
'Oha (<i>Delissea rivularis</i>)	Endangered	Dicot	Yes
(<i>Delissea rivularis</i>)		Terrestrial	
'Oha (<i>Delissea subcordata</i>)	Endangered	Dicot	Yes
(<i>Delissea subcordata</i>)		Terrestrial	
'Oha (<i>Delissea undulata</i>)	Endangered	Dicot	Yes
(<i>Delissea undulata</i>)		Terrestrial	
'Oha (<i>Lobelia gaudichaudii</i> koolauensis)	Endangered	Dicot	Yes
(<i>Lobelia gaudichaudii</i> ssp. <i>koolauensis</i>)		Terrestrial	
'Oha Wai (<i>Clermontia drepanomorpha</i>)	Endangered	Dicot	Yes
(<i>Clermontia drepanomorpha</i>)		Terrestrial	
'Oha Wai (<i>Clermontia lindseyana</i>)	Endangered	Dicot	Yes
(<i>Clermontia lindseyana</i>)		Terrestrial	
'Oha Wai (<i>Clermontia oblongifolia</i> ssp. <i>brevipes</i>)	Endangered	Dicot	Yes
(<i>Clermontia oblongifolia</i> ssp. <i>brevipes</i>)		Terrestrial	
'Oha Wai (<i>Clermontia oblongifolia</i> ssp. <i>mauiensis</i>)	Endangered	Dicot	Yes
(<i>Clermontia oblongifolia</i> ssp. <i>mauiensis</i>)		Terrestrial	
'Oha Wai (<i>Clermontia peleana</i>)	Endangered	Dicot	Yes
(<i>Clermontia peleana</i>)		Terrestrial	
'Oha Wai (<i>Clermontia pyrularia</i>)	Endangered	Dicot	Yes
(<i>Clermontia pyrularia</i>)		Terrestrial	
'Oha Wai (<i>Clermontia samuelii</i>)	Endangered	Dicot	Yes
(<i>Clermontia samuelii</i>)		Terrestrial	

Hawaii

(375) species:

			<u>Taxa</u>	<u>Critical Habitat</u>
'Ohai (<i>Sesbania tomentosa</i>)	Endangered		Dicot	Yes
(<i>Sesbania tomentosa</i>)		Terrestrial		
'Ohe'ohe (<i>Tetraplasandra gymnocarpa</i>)	Endangered		Dicot	Yes
(<i>Tetraplasandra gymnocarpa</i>)		Terrestrial		
'Olulu (<i>Brighamia insignis</i>)	Endangered		Dicot	Yes
(<i>Brighamia insignis</i>)		Terrestrial		
Opuhe (<i>Urera kaalae</i>)	Endangered		Dicot	Yes
(<i>Urera kaalae</i>)		Terrestrial		
Pamakani (<i>Viola chamissoniana</i> ssp. <i>chamissoniana</i>)	Endangered		Dicot	Yes
(<i>Viola chamissoniana</i> ssp. <i>chamissoniana</i>)		Terrestrial		
Papala	Endangered		Dicot	No
(<i>Charpentiera densiflora</i>)		Terrestrial		
Phyllostegia hirsuta (ncn)	Endangered		Dicot	Yes
(<i>Phyllostegia hirsuta</i>)		Terrestrial		
Phyllostegia kaalaensis (ncn)	Endangered		Dicot	Yes
(<i>Phyllostegia kaalaensis</i>)		Terrestrial		
Phyllostegia knudsenii (ncn)	Endangered		Dicot	Yes
(<i>Phyllostegia knudsenii</i>)		Terrestrial		
Phyllostegia mannii (ncn)	Endangered		Dicot	Yes
(<i>Phyllostegia mannii</i>)		Terrestrial		
Phyllostegia mollis (ncn)	Endangered		Dicot	Yes
(<i>Phyllostegia mollis</i>)		Terrestrial		
Phyllostegia parviflora (ncn)	Endangered		Dicot	Yes
(<i>Phyllostegia parviflora</i>)		Terrestrial		
Phyllostegia velutina (ncn)	Endangered		Dicot	Yes
(<i>Phyllostegia velutina</i>)		Terrestrial		
Phyllostegia waimeae (ncn)	Endangered		Dicot	Yes
(<i>Phyllostegia waimeae</i>)		Terrestrial		
Phyllostegia warshaueri (ncn)	Endangered		Dicot	Yes
(<i>Phyllostegia warshaueri</i>)		Terrestrial		
Phyllostegia wawrana (ncn)	Endangered		Dicot	Yes
(<i>Phyllostegia wawrana</i>)		Terrestrial		
Pilo (<i>Hedyotis mannii</i>)	Endangered		Dicot	Yes
(<i>Hedyotis mannii</i>)		Terrestrial		
pilo kea lau li'i	Endangered		Dicot	No
(<i>Platydesma rostrata</i>)		Terrestrial		
Po'e (<i>Portulaca sclerocarpa</i>)	Endangered		Dicot	Yes
(<i>Portulaca sclerocarpa</i>)		Terrestrial		
Popolo 'Aiakeakua (<i>Solanum sandwicense</i>)	Endangered		Dicot	Yes
(<i>Solanum sandwicense</i>)		Terrestrial		
Popolo Ku Mai (<i>Solanum incompletum</i>)	Endangered		Dicot	Yes
(<i>Solanum incompletum</i>)		Terrestrial		

Hawaii

(375) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Pua'ala (<i>Brighamia rockii</i>)	Endangered	Dicot	Yes
(<i>Brighamia rockii</i>)		Terrestrial	
Remya kauaiensis (ncn)	Endangered	Dicot	Yes
(<i>Remya kauaiensis</i>)		Terrestrial	
Remya montgomeryi (ncn)	Endangered	Dicot	Yes
(<i>Remya montgomeryi</i>)		Terrestrial	
Remya, Maui	Endangered	Dicot	Yes
(<i>Remya mauensis</i>)		Terrestrial	
Sandalwood, Lanai (=Iliahi)	Endangered	Dicot	No
(<i>Santalum freycinetianum</i> var. <i>lanaiense</i>)		Terrestrial	
Sanicula mariversa (ncn)	Endangered	Dicot	Yes
(<i>Sanicula mariversa</i>)		Terrestrial	
Sanicula purpurea (ncn)	Endangered	Dicot	Yes
(<i>Sanicula purpurea</i>)		Terrestrial	
Schiedea haleakalensis (ncn)	Endangered	Dicot	Yes
(<i>Schiedea haleakalensis</i>)		Terrestrial	
Schiedea helleri (ncn)	Endangered	Dicot	Yes
(<i>Schiedea helleri</i>)		Terrestrial	
Schiedea hookeri (ncn)	Endangered	Dicot	Yes
(<i>Schiedea hookeri</i>)		Terrestrial	
Schiedea kaalae (ncn)	Endangered	Dicot	Yes
(<i>Schiedea kaalae</i>)		Terrestrial	
Schiedea kauaiensis (ncn)	Endangered	Dicot	Yes
(<i>Schiedea kauaiensis</i>)		Terrestrial	
Schiedea lydgatei (ncn)	Endangered	Dicot	Yes
(<i>Schiedea lydgatei</i>)		Terrestrial	
Schiedea membranacea (ncn)	Endangered	Dicot	Yes
(<i>Schiedea membranacea</i>)		Terrestrial	
Schiedea nuttallii (ncn)	Endangered	Dicot	Yes
(<i>Schiedea nuttallii</i>)		Terrestrial	
Schiedea sarmentosa (ncn)	Endangered	Dicot	Yes
(<i>Schiedea sarmentosa</i>)		Terrestrial	
Schiedea spargulina var. leiopoda (ncn)	Endangered	Dicot	Yes
(<i>Schiedea spargulina</i> var. <i>leiopoda</i>)		Terrestrial	
Schiedea spargulina var. spargulina (ncn)	Threatened	Dicot	Yes
(<i>Schiedea spargulina</i> var. <i>spargulina</i>)		Terrestrial	
Schiedea verticillata (ncn)	Endangered	Dicot	Yes
(<i>Schiedea verticillata</i>)		Terrestrial	
Schiedea, Diamond Head (<i>Schiedea adamantis</i>)	Endangered	Dicot	No
(<i>Schiedea adamantis</i>)		Terrestrial	
Silene alexandri (ncn)	Endangered	Dicot	Yes
(<i>Silene alexandri</i>)		Terrestrial	

Hawaii

(375) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Silene hawaiiensis (ncn)	Threatened	Dicot	Yes
(<i>Silene hawaiiensis</i>)		Terrestrial	
Silene lanceolata (ncn)	Endangered	Dicot	Yes
(<i>Silene lanceolata</i>)		Terrestrial	
Silene perlmanii (ncn)	Endangered	Dicot	Yes
(<i>Silene perlmanii</i>)		Terrestrial	
Silversword, Haleakala ('Ahinahina)	Threatened	Dicot	Yes
(<i>Argyroxiphium sandwicense</i> ssp. <i>macrocephalum</i>)		Terrestrial	
Silversword, Ka'u (Argyroxiphium kauense)	Endangered	Dicot	Yes
(<i>Argyroxiphium kauense</i>)		Terrestrial	
Silversword, Mauna Kea ('Ahinahina)	Endangered	Dicot	No
(<i>Argyroxiphium sandwicense</i> ssp. <i>sandwicense</i>)		Terrestrial	
Spermolepis hawaiiensis (ncn)	Endangered	Dicot	Yes
(<i>Spermolepis hawaiiensis</i>)		Terrestrial	
Stenogyne angustifolia (ncn)	Endangered	Dicot	No
(<i>Stenogyne angustifolia</i> var. <i>angustifolia</i>)		Terrestrial	
Stenogyne bifida (ncn)	Endangered	Dicot	Yes
(<i>Stenogyne bifida</i>)		Terrestrial	
Stenogyne campanulata (ncn)	Endangered	Dicot	Yes
(<i>Stenogyne campanulata</i>)		Terrestrial	
Stenogyne kanehoana (ncn)	Endangered	Dicot	Yes
(<i>Stenogyne kanehoana</i>)		Terrestrial	
Tetramolopium arenarium (ncn)	Endangered	Dicot	No
(<i>Tetramolopium arenarium</i>)		Terrestrial	
Tetramolopium capillare (ncn)	Endangered	Dicot	Yes
(<i>Tetramolopium capillare</i>)		Terrestrial	
Tetramolopium filiforme (ncn)	Endangered	Dicot	Yes
(<i>Tetramolopium filiforme</i>)		Terrestrial	
Tetramolopium lepidotum ssp. <i>lepidotum</i> (ncn)	Endangered	Dicot	Yes
(<i>Tetramolopium lepidotum</i> ssp. <i>lepidotum</i>)		Terrestrial	
Tetramolopium remyi (ncn)	Endangered	Dicot	Yes
(<i>Tetramolopium remyi</i>)		Terrestrial	
Tetramolopium rockii (ncn)	Threatened	Dicot	Yes
(<i>Tetramolopium rockii</i>)		Coastal (neritic), Terrestrial	
Trematolobelia singularis (ncn)	Endangered	Dicot	Yes
(<i>Trematolobelia singularis</i>)		Terrestrial	
Uhiuhi (Caesalpinia kavaensis)	Endangered	Dicot	No
(<i>Caesalpinia kavaense</i>)		Terrestrial	
Ulihi (Phyllostegia glabra var. <i>lanaiensis</i>)	Endangered	Dicot	No
(<i>Phyllostegia glabra</i> var. <i>lanaiensis</i>)		Terrestrial	
Vetch, Hawaiian (Vicia menziesii)	Endangered	Dicot	No
(<i>Vicia menziesii</i>)		Terrestrial	

Hawaii

(375) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Vigna o-wahuensis (ncn)	Endangered	Dicot	Yes
(<i>Vigna o-wahuensis</i>)		Terrestrial	
Viola helenae (ncn)	Endangered	Dicot	Yes
(<i>Viola helenae</i>)		Terrestrial	
Viola lanaiensis (ncn)	Endangered	Dicot	No
(<i>Viola lanaiensis</i>)		Terrestrial	
Viola oahuensis (ncn)	Endangered	Dicot	Yes
(<i>Viola oahuensis</i>)		Terrestrial	
Wahine Noho Kula (Isodendron pyrifolium)	Endangered	Dicot	Yes
(<i>Isodendron pyrifolium</i>)		Terrestrial	
Xylosma crenatum (ncn)	Endangered	Dicot	Yes
(<i>Xylosma crenatum</i>)		Terrestrial	
Asplenium fragile var. insulare (ncn)	Endangered	Ferns	Yes
(<i>Asplenium fragile</i> var. <i>insulare</i>)		Terrestrial	
Diellia erecta (ncn)	Endangered	Ferns	Yes
(<i>Diellia erecta</i>)		Terrestrial	
Diellia falcata (ncn)	Endangered	Ferns	Yes
(<i>Diellia falcata</i>)		Terrestrial	
Diellia pallida (ncn)	Endangered	Ferns	Yes
(<i>Diellia pallida</i>)		Terrestrial	
Diellia unisora (ncn)	Endangered	Ferns	Yes
(<i>Diellia unisora</i>)		Terrestrial	
Diplazium molokaiense (ncn)	Endangered	Ferns	Yes
(<i>Diplazium molokaiense</i>)		Terrestrial	
Fern, Pendant Kihi (Adenophorus periens)	Endangered	Ferns	Yes
(<i>Adenophorus periens</i>)		Terrestrial	
'Ihi'Ihi (Marsilea villosa)	Endangered	Ferns	Yes
(<i>Marsilea villosa</i>)		Vernal pool, Terrestrial	
Pauoa (Ctenitis squamigera)	Endangered	Ferns	Yes
(<i>Ctenitis squamigera</i>)		Terrestrial	
Pteris lidgatei (ncn)	Endangered	Ferns	Yes
(<i>Pteris lidgatei</i>)		Terrestrial	
Wawae'ole (Phlegmariurus (=Huperzia) mannii)	Endangered	Ferns	Yes
(<i>Huperzia mannii</i>)		Terrestrial	
Wawae'ole (Phlegmariurus (=Lycopodium) nutans)	Endangered	Ferns	Yes
(<i>Lycopodium</i> (=Phlegmariurus) <i>nutans</i>)		Terrestrial	
Snail, Newcomb's	Threatened	Gastropod	Yes
(<i>Erinna newcombi</i>)		Freshwater	
Snail, O'ahu Tree (Achatinella abbreviata)	Endangered	Gastropod	No
(<i>Achatinella abbreviata</i>)		Terrestrial	
Snail, O'ahu Tree (Achatinella apexfulva)	Endangered	Gastropod	No
(<i>Achatinella apexfulva</i>)		Terrestrial	

Hawaii

(375) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Snail, O'ahu Tree (<i>Achatinella bellula</i>)	Endangered	Gastropod	No
(<i>Achatinella bellula</i>)		Terrestrial	
Snail, O'ahu Tree (<i>Achatinella buddii</i>)	Endangered	Gastropod	No
(<i>Achatinella buddii</i>)		Terrestrial	
Snail, O'ahu Tree (<i>Achatinella bulimoides</i>)	Endangered	Gastropod	No
(<i>Achatinella bulimoides</i>)		Terrestrial	
Snail, O'ahu Tree (<i>Achatinella byronii</i>)	Endangered	Gastropod	No
(<i>Achatinella byronii</i>)		Terrestrial	
Snail, O'ahu Tree (<i>Achatinella caesia</i>)	Endangered	Gastropod	No
(<i>Achatinella caesia</i>)		Terrestrial	
Snail, O'ahu Tree (<i>Achatinella casta</i>)	Endangered	Gastropod	No
(<i>Achatinella casta</i>)		Terrestrial	
Snail, O'ahu Tree (<i>Achatinella cestus</i>)	Endangered	Gastropod	No
(<i>Achatinella cestus</i>)		Terrestrial	
Snail, O'ahu Tree (<i>Achatinella concavospira</i>)	Endangered	Gastropod	No
(<i>Achatinella concavospira</i>)		Terrestrial	
Snail, O'ahu Tree (<i>Achatinella curta</i>)	Endangered	Gastropod	No
(<i>Achatinella curta</i>)		Terrestrial	
Snail, O'ahu Tree (<i>Achatinella decipiens</i>)	Endangered	Gastropod	No
(<i>Achatinella decipiens</i>)		Terrestrial	
Snail, O'ahu Tree (<i>Achatinella decora</i>)	Endangered	Gastropod	No
(<i>Achatinella decora</i>)		Terrestrial	
Snail, O'ahu Tree (<i>Achatinella dimorpha</i>)	Endangered	Gastropod	No
(<i>Achatinella dimorpha</i>)		Terrestrial	
Snail, O'ahu Tree (<i>Achatinella elegans</i>)	Endangered	Gastropod	No
(<i>Achatinella elegans</i>)		Terrestrial	
Snail, O'ahu Tree (<i>Achatinella fulgens</i>)	Endangered	Gastropod	No
(<i>Achatinella fulgens</i>)		Terrestrial	
Snail, O'ahu Tree (<i>Achatinella fuscobasis</i>)	Endangered	Gastropod	No
(<i>Achatinella fuscobasis</i>)		Terrestrial	
Snail, O'ahu Tree (<i>Achatinella juddii</i>)	Endangered	Gastropod	No
(<i>Achatinella juddii</i>)		Terrestrial	
Snail, O'ahu Tree (<i>Achatinella juncea</i>)	Endangered	Gastropod	No
(<i>Achatinella juncea</i>)		Terrestrial	
Snail, O'ahu Tree (<i>Achatinella lehuiensis</i>)	Endangered	Gastropod	No
(<i>Achatinella lehuiensis</i>)		Terrestrial	
Snail, O'ahu Tree (<i>Achatinella leucorraphe</i>)	Endangered	Gastropod	No
(<i>Achatinella leucorraphe</i>)		Terrestrial	
Snail, O'ahu Tree (<i>Achatinella lila</i>)	Endangered	Gastropod	No
(<i>Achatinella lila</i>)		Terrestrial	
Snail, O'ahu Tree (<i>Achatinella livida</i>)	Endangered	Gastropod	No
(<i>Achatinella livida</i>)		Terrestrial	

Hawaii

(375) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Snail, O'ahu Tree (<i>Achatinella lorata</i>)	Endangered	Gastropod	No
(<i>Achatinella lorata</i>)		Terrestrial	
Snail, O'ahu Tree (<i>Achatinella mustelina</i>)	Endangered	Gastropod	No
(<i>Achatinella mustelina</i>)		Terrestrial	
Snail, O'ahu Tree (<i>Achatinella papyracea</i>)	Endangered	Gastropod	No
(<i>Achatinella papyracea</i>)		Terrestrial	
Snail, O'ahu Tree (<i>Achatinella phaeozona</i>)	Endangered	Gastropod	No
(<i>Achatinella phaeozona</i>)		Terrestrial	
Snail, O'ahu Tree (<i>Achatinella pulcherrima</i>)	Endangered	Gastropod	No
(<i>Achatinella pulcherrima</i>)		Terrestrial	
Snail, O'ahu Tree (<i>Achatinella pupukanioe</i>)	Endangered	Gastropod	No
(<i>Achatinella pupukanioe</i>)		Terrestrial	
Snail, O'ahu Tree (<i>Achatinella rosea</i>)	Endangered	Gastropod	No
(<i>Achatinella rosea</i>)		Terrestrial	
Snail, O'ahu Tree (<i>Achatinella sowerbyana</i>)	Endangered	Gastropod	No
(<i>Achatinella sowerbyana</i>)		Terrestrial	
Snail, O'ahu Tree (<i>Achatinella spaldingi</i>)	Endangered	Gastropod	No
(<i>Achatinella spaldingi</i>)		Terrestrial	
Snail, O'ahu Tree (<i>Achatinella stewartii</i>)	Endangered	Gastropod	No
(<i>Achatinella stewartii</i>)		Terrestrial	
Snail, O'ahu Tree (<i>Achatinella swiftii</i>)	Endangered	Gastropod	No
(<i>Achatinella swiftii</i>)		Terrestrial	
Snail, O'ahu Tree (<i>Achatinella taeniolata</i>)	Endangered	Gastropod	No
(<i>Achatinella taeniolata</i>)		Terrestrial	
Snail, O'ahu Tree (<i>Achatinella thaanumi</i>)	Endangered	Gastropod	No
(<i>Achatinella thaanumi</i>)		Terrestrial	
Snail, O'ahu Tree (<i>Achatinella turgida</i>)	Endangered	Gastropod	No
(<i>Achatinella turgida</i>)		Terrestrial	
Snail, O'ahu Tree (<i>Achatinella valida</i>)	Endangered	Gastropod	No
(<i>Achatinella valida</i>)		Terrestrial	
Hawaiian picture-wing Fly	Endangered	Insect	No
(<i>Drosophila sharpi</i>)		Terrestrial	
Moth, Blackburn's Sphinx	Endangered	Insect	Yes
(<i>Manduca blackburni</i>)		Terrestrial	
Bat, Hawaiian Hoary	Endangered	Mammal	No
(<i>Lasiurus cinereus semotus</i>)		Terrestrial, Subterraneous	
Seal, Hawaiian Monk	Endangered	Marine mml	Yes
(<i>Monachus schauinslandi</i>)		Coastal (neritic), Saltwater	
Bluegrass, Hawaiian	Endangered	Monocot	Yes
(<i>Poa sandwicensis</i>)		Terrestrial	
Bluegrass, Mann's (<i>Poa mannii</i>)	Endangered	Monocot	Yes
(<i>Poa mannii</i>)		Terrestrial	

Hawaii

(375) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Gahnia lanaiensis (ncn)	Endangered	Monocot	No
(<i>Gahnia lanaiensis</i>)		Terrestrial	
Grass, Fosberg's Love	Endangered	Monocot	Yes
(<i>Eragrostis fosbergii</i>)		Terrestrial	
Hala Pepe (Pleomele hawaiiensis)	Endangered	Monocot	Yes
(<i>Pleomele hawaiiensis</i>)		Terrestrial	
Hilo Ischaemum (Ischaemum byrone)	Endangered	Monocot	Yes
(<i>Ischaemum byrone</i>)		Terrestrial	
Kamanomano (Cenchrus agrimonioides)	Endangered	Monocot	Yes
(<i>Cenchrus agrimonioides</i>)		Terrestrial	
Lau'ehu (Panicum niihauense)	Endangered	Monocot	Yes
(<i>Panicum niihauense</i>)		Terrestrial	
lo`ulu	Endangered	Monocot	No
(<i>Pritchardia hardyi</i>)		Terrestrial	
Lo`ulu (Pritchardia affinis)	Endangered	Monocot	No
(<i>Pritchardia affinis</i>)		Terrestrial	
Lo`ulu (Pritchardia kaalae)	Endangered	Monocot	No
(<i>Pritchardia kaalae</i>)		Terrestrial	
Lo`ulu (Pritchardia munroi)	Endangered	Monocot	Yes
(<i>Pritchardia munroi</i>)		Terrestrial	
Lo`ulu (Pritchardia napaliensis)	Endangered	Monocot	No
(<i>Pritchardia napaliensis</i>)		Terrestrial	
Lo`ulu (Pritchardia remota)	Endangered	Monocot	Yes
(<i>Pritchardia remota</i>)		Terrestrial	
Lo`ulu (Pritchardia schattaueri)	Endangered	Monocot	No
(<i>Pritchardia schattaueri</i>)		Terrestrial	
Lo`ulu (Pritchardia viscosa)	Endangered	Monocot	No
(<i>Pritchardia viscosa</i>)		Terrestrial	
Mariscus fauriei (ncn)	Endangered	Monocot	Yes
(<i>Mariscus fauriei</i>)		Terrestrial	
Mariscus pennatifomis (ncn)	Endangered	Monocot	Yes
(<i>Mariscus pennatifomis</i>)		Terrestrial	
Pa'iniu	Endangered	Monocot	No
(<i>Astelia waialealae</i>)		Terrestrial	
Panicgrass, Carter's (Panicum fauriei var. carteri)	Endangered	Monocot	Yes
(<i>Panicum fauriei</i> var. <i>carteri</i>)		Terrestrial	
Platanthera holochila (ncn)	Endangered	Monocot	Yes
(<i>Platanthera holochila</i>)		Terrestrial	
Poa siphonoglossa (ncn)	Endangered	Monocot	Yes
(<i>Poa siphonoglossa</i>)		Terrestrial	
Pu'uka'a (Cyperus trachysanthos)	Endangered	Monocot	Yes
(<i>Cyperus trachysanthos</i>)		Terrestrial	

Hawaii

(375) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Wahane (<i>Pritchardia aylmer-robinsonii</i>)	Endangered	Monocot	No
(<i>Pritchardia aylmer-robinsonii</i>)		Terrestrial	
Sea turtle, green	Endangered	Reptile	No
(<i>Chelonia mydas</i>)		Saltwater	
Sea turtle, hawksbill	Endangered	Reptile	Yes
(<i>Eretmochelys imbricata</i>)		Saltwater	

Idaho

(20) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Crane, Whooping	Endangered	Bird	Yes
(<i>Grus americana</i>)		Terrestrial, Freshwater	
Catchfly, Spalding's	Threatened	Dicot	No
(<i>Silene spaldingii</i>)		Terrestrial	
Four-o'clock, Macfarlane's	Threatened	Dicot	No
(<i>Mirabilis macfarlanei</i>)		Terrestrial	
Howellia, Water	Threatened	Dicot	No
(<i>Howellia aquatilis</i>)		Freshwater	
Salmon, Chinook (Snake River Fall Run)	Threatened	Fish	No
(<i>Oncorhynchus (=Salmo) tshawytscha</i>)		Freshwater, Saltwater, Brackish	
Salmon, Chinook (Snake River spring/summer)	Threatened	Fish	Yes
(<i>Oncorhynchus (=Salmo) tshawytscha</i>)		Brackish, Saltwater, Freshwater	
Salmon, Sockeye (Snake River population)	Endangered	Fish	No
(<i>Oncorhynchus (=Salmo) nerka</i>)		Brackish, Saltwater, Freshwater	
Steelhead, (Snake River Basin population)	Threatened	Fish	Yes
(<i>Oncorhynchus (=Salmo) mykiss</i>)		Freshwater, Brackish, Saltwater	
Sturgeon, White	Endangered	Fish	Yes
(<i>Acipenser transmontanus</i>)		Saltwater, Freshwater	
Trout, Bull	Threatened	Fish	No
(<i>Salvelinus confluentus</i>)		Freshwater	
Trout, Bull (Columbia River population)	Threatened	Fish	Yes
(<i>Salvelinus confluentus</i>)		Freshwater	
Trout, Bull (Klamath River population)	Threatened	Fish	Yes
(<i>Salvelinus confluentus</i>)		Freshwater	
Limpet, Banbury Springs	Endangered	Gastropod	No
(<i>Lanx sp.</i>)		Freshwater	
Snail, Bliss Rapids	Threatened	Gastropod	No
(<i>Taylorconcha serpenticola</i>)		Freshwater	
Snail, Snake River Physa	Endangered	Gastropod	No
(<i>Physa natricina</i>)		Terrestrial	
Snail, Utah Valvata	Endangered	Gastropod	No
(<i>Valvata utahensis</i>)		Terrestrial	
Springsnail, Bruneau Hot	Endangered	Gastropod	No
(<i>Pyrgulopsis bruneauensis</i>)		Freshwater	
Bear, Grizzly	Threatened	Mammal	No
(<i>Ursus arctos horribilis</i>)		Terrestrial	

Idaho

(20) species:

Caribou, Woodland (<i>Rangifer tarandus caribou</i>)	Endangered	<u>Taxa</u> Mammal	<u>Critical Habitat</u> No
Squirrel, Northern Idaho Ground (<i>Spermophilus brunneus brunneus</i>)	Threatened	Terrestrial Mammal	No

Illinois

(24) species:

Plover, Piping (<i>Charadrius melodus</i>)	Endangered	<u>Taxa</u> Bird	<u>Critical Habitat</u> Yes
Tern, Interior (population) Least (<i>Sterna antillarum</i>)	Endangered	Terrestrial Bird	No
Fanshell (<i>Cyprogenia stegaria</i>)	Endangered	Terrestrial Bivalve	No
Mucket, Pink (Pearlymussel) (<i>Lampsilis abrupta</i>)	Endangered	Freshwater Bivalve	No
Pearlymussel, Fat Pocketbook (<i>Potamilus capax</i>)	Endangered	Freshwater Bivalve	No
Pearlymussel, Higgins' Eye (<i>Lampsilis higginsii</i>)	Endangered	Freshwater Bivalve	No
Pearlymussel, Orange-footed (<i>Plethobasus cooperianus</i>)	Endangered	Freshwater Bivalve	No
Pearlymussel, White Wartyback (<i>Plethobasus cicatricosus</i>)	Endangered	Freshwater Bivalve	No
Amphipod, Illinois Cave (<i>Gammarus acherondytes</i>)	Endangered	Crustacean Subterranean, Freshwater	No
Aster, Decurrent False (<i>Boltonia decurrens</i>)	Threatened	Dicot Terrestrial, Freshwater	No
Clover, Leafy Prairie (<i>Dalea foliosa</i>)	Endangered	Dicot Terrestrial	No
Clover, Prairie Bush (<i>Lespedeza leptostachya</i>)	Threatened	Dicot Terrestrial	No
Daisy, Lakeside (<i>Hymenoxys herbacea</i>)	Threatened	Dicot Freshwater	No
Milkweed, Mead's (<i>Asclepias meadii</i>)	Threatened	Dicot Terrestrial	No
Potato-bean, Price's (<i>Apios priceana</i>)	Threatened	Dicot Terrestrial	No
Thistle, Pitcher's (<i>Cirsium pitcheri</i>)	Threatened	Dicot Terrestrial	No
Sturgeon, Pallid (<i>Scaphirhynchus albus</i>)	Endangered	Fish Freshwater	No
Snail, Iowa Pleistocene (<i>Discus macclintocki</i>)	Endangered	Gastropod Terrestrial	No
Butterfly, Karner Blue (<i>Lycaeides melissa samuelis</i>)	Endangered	Insect Terrestrial	No

Illinois

(24) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Dragonfly, Hine's Emerald (<i>Somatochlora hineana</i>)	Endangered	Insect Freshwater, Terrestrial	Yes
Bat, Gray (<i>Myotis grisescens</i>)	Endangered	Mammal Subterranean, Terrestrial	No
Bat, Indiana (<i>Myotis sodalis</i>)	Endangered	Mammal Subterranean, Terrestrial	Yes
Orchid, Eastern Prairie Fringed (<i>Platanthera leucophaea</i>)	Threatened	Monocot Terrestrial	No
Pogonia, Small Whorled (<i>Isotria medeoloides</i>)	Threatened	Monocot Terrestrial	No

Indiana

(20) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Plover, Piping (<i>Charadrius melodus</i>)	Endangered	Bird Terrestrial	Yes
Fanshell (<i>Cyprogenia stegaria</i>)	Endangered	Bivalve Freshwater	No
Mucket, Pink (Pearlymussel) (<i>Lampsilis abrupta</i>)	Endangered	Bivalve Freshwater	No
Mussel, Clubshell (<i>Pleurobema clava</i>)	Endangered	Bivalve Freshwater	No
Mussel, Ring Pink (=Golf Stick Pearly) (<i>Obovaria retusa</i>)	Endangered	Bivalve Freshwater	No
Mussel, Rough Pigtoe (<i>Pleurobema plenum</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Fat Pocketbook (<i>Potamilus capax</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Tubercled-blossom (<i>Epioblasma torulosa torulosa</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, White Cat's Paw (<i>Epioblasma obliquata perobliqua</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, White Wartyback (<i>Plethobasus cicatricosus</i>)	Endangered	Bivalve Freshwater	No
Riffleshell, Northern (<i>Epioblasma torulosa rangiana</i>)	Endangered	Bivalve Freshwater	No
Clover, Running Buffalo (<i>Trifolium stoloniferum</i>)	Endangered	Dicot Terrestrial	No
Goldenrod, Short's (<i>Solidago shortii</i>)	Endangered	Dicot Terrestrial	No
Milkweed, Mead's (<i>Asclepias meadii</i>)	Threatened	Dicot Terrestrial	No
Thistle, Pitcher's (<i>Cirsium pitcheri</i>)	Threatened	Dicot Terrestrial	No
Butterfly, Karner Blue (<i>Lycaeides melissa samuelis</i>)	Endangered	Insect Terrestrial	No

Indiana (20) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Butterfly, Mitchell's Satyr (<i>Neonympha mitchellii mitchellii</i>)	Endangered	Insect Terrestrial	No
Bat, Gray (<i>Myotis grisescens</i>)	Endangered	Mammal Subterraneous, Terrestrial	No
Bat, Indiana (<i>Myotis sodalis</i>)	Endangered	Mammal Subterraneous, Terrestrial	Yes
Snake, Northern Copperbelly Water (<i>Nerodia erythrogaster neglecta</i>)	Threatened	Reptile Freshwater, Terrestrial	No

Iowa (14) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Plover, Piping (<i>Charadrius melodus</i>)	Endangered	Bird Terrestrial	Yes
Tern, Interior (population) Least (<i>Sterna antillarum</i>)	Endangered	Bird Terrestrial	No
Pearlymussel, Fat Pocketbook (<i>Potamilus capax</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Higgins' Eye (<i>Lampsilis higginsii</i>)	Endangered	Bivalve Freshwater	No
Clover, Prairie Bush (<i>Lespedeza leptostachya</i>)	Threatened	Dicot Terrestrial	No
Milkweed, Mead's (<i>Asclepias meadii</i>)	Threatened	Dicot Terrestrial	No
Monkshood, Northern Wild (<i>Aconitum noveboracense</i>)	Threatened	Dicot Terrestrial	No
Fern, American hart's-tongue (<i>Asplenium scolopendrium var. americanum</i>)	Threatened	Ferns Terrestrial	No
Shiner, Topeka (<i>Notropis topeka (=tristis)</i>)	Endangered	Fish Freshwater	Yes
Sturgeon, Pallid (<i>Scaphirhynchus albus</i>)	Endangered	Fish Freshwater	No
Snail, Iowa Pleistocene (<i>Discus macclintocki</i>)	Endangered	Gastropod Terrestrial	No
Bat, Indiana (<i>Myotis sodalis</i>)	Endangered	Mammal Subterraneous, Terrestrial	Yes
Orchid, Eastern Prairie Fringed (<i>Platanthera leucophaea</i>)	Threatened	Monocot Terrestrial	No
Orchid, Western Prairie Fringed (<i>Platanthera praeclara</i>)	Threatened	Monocot Terrestrial	No

Kansas (12) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Crane, Whooping (<i>Grus americana</i>)	Endangered	Bird Terrestrial, Freshwater	Yes
Plover, Piping (<i>Charadrius melodus</i>)	Endangered	Bird Terrestrial	Yes

Kansas (12) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Tern, Interior (population) Least (<i>Sterna antillarum</i>)	Endangered	Bird Terrestrial	No
Milkweed, Mead's (<i>Asclepias meadii</i>)	Threatened	Dicot Terrestrial	No
Madtom, Neosho (<i>Noturus placidus</i>)	Threatened	Fish Freshwater	No
Shiner, Arkansas River (<i>Notropis girardi</i>)	Threatened	Fish Freshwater	Yes
Shiner, Topeka (<i>Notropis topeka (=tristis)</i>)	Endangered	Fish Freshwater	Yes
Sturgeon, Pallid (<i>Scaphirhynchus albus</i>)	Endangered	Fish Freshwater	No
Beetle, American Burying (<i>Nicrophorus americanus</i>)	Endangered	Insect Terrestrial	No
Bat, Gray (<i>Myotis grisescens</i>)	Endangered	Mammal Subterranean, Terrestrial	No
Ferret, Black-footed (<i>Mustela nigripes</i>)	Endangered	Mammal Terrestrial	No
Orchid, Western Prairie Fringed (<i>Platanthera praeclara</i>)	Threatened	Monocot Terrestrial	No

Kentucky (48) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Plover, Piping (<i>Charadrius melodus</i>)	Endangered	Bird Terrestrial	Yes
Tern, Interior (population) Least (<i>Sterna antillarum</i>)	Endangered	Bird Terrestrial	No
Warbler (=Wood), Kirtland's (<i>Dendroica kirtlandii</i>)	Endangered	Bird Terrestrial	No
Warbler, Bachman's (<i>Vermivora bachmanii</i>)	Endangered	Bird Terrestrial	No
Woodpecker, Ivory-billed (<i>Campephilus principalis</i>)	Endangered	Bird Terrestrial	No
Woodpecker, Red-cockaded (<i>Picoides borealis</i>)	Endangered	Bird Terrestrial	No
Fanshell (<i>Cyprogenia stegaria</i>)	Endangered	Bivalve Freshwater	No
Mucket, Pink (Pearlymussel) (<i>Lampsilis abrupta</i>)	Endangered	Bivalve Freshwater	No
Mussel, Clubshell (<i>Pleurobema clava</i>)	Endangered	Bivalve Freshwater	No
Mussel, Cumberland Combshell (<i>Epioblasma brevidens</i>)	Endangered	Bivalve Freshwater	Yes
Mussel, Cumberland Elktoe (<i>Alasmodonta atropurpurea</i>)	Endangered	Bivalve Freshwater	Yes

Kentucky

(48) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Mussel, Oyster	Endangered	Bivalve	Yes
(<i>Epioblasma capsaeformis</i>)		Freshwater	
Mussel, Ring Pink (=Golf Stick Pearly)	Endangered	Bivalve	No
(<i>Obovaria retusa</i>)		Freshwater	
Mussel, Rough Pigtoe	Endangered	Bivalve	No
(<i>Pleurobema plenum</i>)		Freshwater	
Mussel, Winged Mapleleaf	Endangered	Bivalve	No
(<i>Quadrula fragosa</i>)		Freshwater	
Pearlymussel, Appalachian Monkeyface	Endangered	Bivalve	No
(<i>Quadrula sparsa</i>)		Freshwater	
Pearlymussel, Cracking	Endangered	Bivalve	No
(<i>Hemistena lata</i>)		Freshwater	
Pearlymussel, Cumberland Bean	Endangered	Bivalve	No
(<i>Villosa trabalis</i>)		Freshwater	
Pearlymussel, Dromedary	Endangered	Bivalve	No
(<i>Dromus dromas</i>)		Freshwater	
Pearlymussel, Fat Pocketbook	Endangered	Bivalve	No
(<i>Potamilus capax</i>)		Freshwater	
Pearlymussel, Little-wing	Endangered	Bivalve	No
(<i>Pegias fabula</i>)		Freshwater	
Pearlymussel, Orange-footed	Endangered	Bivalve	No
(<i>Plethobasus cooperianus</i>)		Freshwater	
Pearlymussel, Purple Cat's Paw	Endangered	Bivalve	No
(<i>Epioblasma obliquata obliquata</i>)		Freshwater	
Pearlymussel, Tubercled-blossom	Endangered	Bivalve	No
(<i>Epioblasma torulosa torulosa</i>)		Freshwater	
Pearlymussel, White Wartyback	Endangered	Bivalve	No
(<i>Plethobasus cicatricosus</i>)		Freshwater	
Pearlymussel, Yellow-blossom	Endangered	Bivalve	No
(<i>Epioblasma florentina florentina</i>)		Freshwater	
Riffleshell, Northern	Endangered	Bivalve	No
(<i>Epioblasma torulosa rangiana</i>)		Freshwater	
Riffleshell, Tan	Endangered	Bivalve	No
(<i>Epioblasma florentina walkeri</i> (=E. walkeri))		Freshwater	
Shrimp, Kentucky Cave	Endangered	Crustacean	Yes
(<i>Palaemonias ganteri</i>)		Freshwater	
Chaffseed, American	Endangered	Dicot	No
(<i>Schwalbea americana</i>)		Terrestrial	
Clover, Running Buffalo	Endangered	Dicot	No
(<i>Trifolium stoloniferum</i>)		Terrestrial	
Goldenrod, Short's	Endangered	Dicot	No
(<i>Solidago shortii</i>)		Terrestrial	

Kentucky

(48) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Goldenrod, White-haired (<i>Solidago albopilosa</i>)	Threatened	Dicot Terrestrial	No
Potato-bean, Price's (<i>Apios priceana</i>)	Threatened	Dicot Terrestrial	No
Rock-cress, Large (=Braun's) (<i>Arabis perstellata</i> E. L. Braun var. <i>ampla</i> Rollins)	Endangered	Dicot Terrestrial	Yes
Rock-cress, Small (<i>Arabis perstellata</i> E. L. Braun var. <i>perstellata</i> Fernald)	Endangered	Dicot Terrestrial	Yes
Rosemary, Cumberland (<i>Conradina verticillata</i>)	Threatened	Dicot Terrestrial	No
Sandwort, Cumberland (<i>Arenaria cumberlandensis</i>)	Endangered	Dicot Terrestrial	No
Spiraea, Virginia (<i>Spiraea virginiana</i>)	Threatened	Dicot Terrestrial	No
Dace, Blackside (<i>Phoxinus cumberlandensis</i>)	Threatened	Fish Freshwater	No
Darter, Bluemask (=jewel) (<i>Etheostoma</i> /)	Endangered	Fish Freshwater	No
Darter, Relict (<i>Etheostoma chienense</i>)	Endangered	Fish Freshwater	No
Shiner, Palezone (<i>Notropis albizonatus</i>)	Endangered	Fish Freshwater	No
Sturgeon, Pallid (<i>Scaphirhynchus albus</i>)	Endangered	Fish Freshwater	No
Beetle, American Burying (<i>Nicrophorus americanus</i>)	Endangered	Insect Terrestrial	No
Bat, Gray (<i>Myotis grisescens</i>)	Endangered	Mammal Subterranean, Terrestrial	No
Bat, Indiana (<i>Myotis sodalis</i>)	Endangered	Mammal Subterranean, Terrestrial	Yes
Bat, Virginia Big-eared (<i>Corynorhinus</i> (=Plecotus) <i>townsendii virginianus</i>)	Endangered	Mammal Terrestrial, Subterranean	Yes

Louisiana

(21) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Plover, Piping (<i>Charadrius melodus</i>)	Endangered	Bird Terrestrial	Yes
Tern, California Least (<i>Sterna antillarum browni</i>)	Endangered	Bird Terrestrial	No
Tern, Interior (population) Least (<i>Sterna antillarum</i>)	Endangered	Bird Terrestrial	No
Woodpecker, Red-cockaded (<i>Picoides borealis</i>)	Endangered	Bird Terrestrial	No
Mucket, Pink (Pearlymussel) (<i>Lampsilis abrupta</i>)	Endangered	Bivalve Freshwater	No

Louisiana

(21) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Mussel, Heelsplitter Inflated (<i>Potamilus inflatus</i>)	Threatened	Bivalve Freshwater	No
Pearlshell, Louisiana (<i>Margaritifera hembeli</i>)	Threatened	Bivalve Freshwater	No
Chaffseed, American (<i>Schwalbea americana</i>)	Endangered	Dicot Terrestrial	No
Fruit, Earth (=geocarpon) (<i>Geocarpon minimum</i>)	Threatened	Dicot Terrestrial	No
Quillwort, Louisiana (<i>Isoetes louisianensis</i>)	Endangered	Ferns Freshwater, Terrestrial	No
Sturgeon, Gulf (<i>Acipenser oxyrinchus desotoi</i>)	Threatened	Fish Saltwater, Freshwater	Yes
Sturgeon, Pallid (<i>Scaphirhynchus albus</i>)	Endangered	Fish Freshwater	No
Bear, Louisiana Black (<i>Ursus americanus luteolus</i>)	Threatened	Mammal Terrestrial	No
Manatee, West Indian (<i>Trichechus manatus</i>)	Endangered	Marine mml Saltwater	Yes
Sea turtle, green (<i>Chelonia mydas</i>)	Endangered	Reptile Saltwater	No
Sea turtle, hawksbill (<i>Eretmochelys imbricata</i>)	Endangered	Reptile Saltwater	Yes
Sea turtle, Kemp's ridley (<i>Lepidochelys kempii</i>)	Endangered	Reptile Saltwater	No
Sea turtle, leatherback (<i>Dermochelys coriacea</i>)	Endangered	Reptile Saltwater	Yes
Sea turtle, loggerhead (<i>Caretta caretta</i>)	Threatened	Reptile Saltwater	No
Tortoise, Gopher (<i>Gopherus polyphemus</i>)	Threatened	Reptile Terrestrial	No
Turtle, Ringed Sawback (<i>Graptemys oculifera</i>)	Threatened	Reptile Freshwater, Terrestrial	No

Maine

(8) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Plover, Piping (<i>Charadrius melodus</i>)	Endangered	Bird Terrestrial	Yes
Tern, Roseate (<i>Sterna dougallii dougallii</i>)	Endangered	Bird Terrestrial	No
Lousewort, Furbish (<i>Pedicularis furbishiae</i>)	Endangered	Dicot Terrestrial	No
Salmon, Atlantic (<i>Salmo salar</i>)	Endangered	Fish Brackish, Saltwater, Freshwater	No
Sturgeon, Shortnose (<i>Acipenser brevirostrum</i>)	Endangered	Fish Saltwater, Freshwater	No

Maine

(8) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Lynx, Canada	Threatened	Mammal	No
(<i>Lynx canadensis</i>)		Terrestrial	
Orchid, Eastern Prairie Fringed	Threatened	Monocot	No
(<i>Platanthera leucophaea</i>)		Terrestrial	
Pogonia, Small Whorled	Threatened	Monocot	No
(<i>Isotria medeoloides</i>)		Terrestrial	

Maryland

(14) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Plover, Piping	Endangered	Bird	Yes
(<i>Charadrius melodus</i>)		Terrestrial	
Mussel, Dwarf Wedge	Endangered	Bivalve	No
(<i>Alasmidonta heterodon</i>)		Freshwater	
Dropwort, Canby's	Endangered	Dicot	No
(<i>Oxypolis canbyi</i>)		Terrestrial, Freshwater	
Gerardia, Sandplain	Endangered	Dicot	No
(<i>Agalinis acuta</i>)		Terrestrial	
Harperella	Endangered	Dicot	No
(<i>Ptilimnium nodosum</i>)		Freshwater	
Darter, Maryland	Endangered	Fish	Yes
(<i>Etheostoma sellare</i>)		Freshwater	
Sturgeon, Shortnose	Endangered	Fish	No
(<i>Acipenser brevirostrum</i>)		Saltwater, Freshwater	
Beetle, Northeastern Beach Tiger	Threatened	Insect	No
(<i>Cicindela dorsalis dorsalis</i>)		Terrestrial	
Beetle, Puritan Tiger	Threatened	Insect	No
(<i>Cicindela puritana</i>)		Terrestrial, Coastal (neritic)	
Bat, Indiana	Endangered	Mammal	Yes
(<i>Myotis sodalis</i>)		Subterranean, Terrestrial	
Squirrel, Delmarva Peninsula Fox	Endangered	Mammal	No
(<i>Sciurus niger cinereus</i>)		Terrestrial	
Bulrush, Northeastern (=Barbed Bristle)	Endangered	Monocot	No
(<i>Scirpus ancistrochaetus</i>)		Terrestrial, Freshwater	
Pink, Swamp	Threatened	Monocot	No
(<i>Helonias bullata</i>)		Terrestrial, Freshwater	
Turtle, Bog (Northern population)	Threatened	Reptile	No
(<i>Clemmys muhlenbergii</i>)		Terrestrial, Freshwater	

Massachusetts

(12) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Plover, Piping	Endangered	Bird	Yes
(<i>Charadrius melodus</i>)		Terrestrial	
Tern, Roseate	Endangered	Bird	No
(<i>Sterna dougallii dougallii</i>)		Terrestrial	
Gerardia, Sandplain	Endangered	Dicot	No
(<i>Agalinis acuta</i>)		Terrestrial	

Massachusetts

(12) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Sturgeon, Shortnose	Endangered	Fish	No
(<i>Acipenser brevirostrum</i>)		Saltwater, Freshwater	
Beetle, American Burying	Endangered	Insect	No
(<i>Nicrophorus americanus</i>)		Terrestrial	
Beetle, Northeastern Beach Tiger	Threatened	Insect	No
(<i>Cicindela dorsalis dorsalis</i>)		Terrestrial	
Beetle, Puritan Tiger	Threatened	Insect	No
(<i>Cicindela puritana</i>)		Terrestrial, Coastal (neritic)	
Bat, Indiana	Endangered	Mammal	Yes
(<i>Myotis sodalis</i>)		Subterranean, Terrestrial	
Bulrush, Northeastern (=Barbed Bristle)	Endangered	Monocot	No
(<i>Scirpus ancistrochaetus</i>)		Terrestrial, Freshwater	
Pogonia, Small Whorled	Threatened	Monocot	No
(<i>Isotria medeoloides</i>)		Terrestrial	
Turtle, Bog (Northern population)	Threatened	Reptile	No
(<i>Clemmys muhlenbergii</i>)		Terrestrial, Freshwater	
Turtle, Plymouth Red-bellied	Endangered	Reptile	Yes
(<i>Pseudemys rubriventris bangsi</i>)		Terrestrial, Freshwater	

Michigan

(17) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Plover, Piping	Endangered	Bird	Yes
(<i>Charadrius melodus</i>)		Terrestrial	
Warbler (=Wood), Kirtland's	Endangered	Bird	No
(<i>Dendroica kirtlandii</i>)		Terrestrial	
Mussel, Clubshell	Endangered	Bivalve	No
(<i>Pleurobema clava</i>)		Freshwater	
Riffleshell, Northern	Endangered	Bivalve	No
(<i>Epioblasma torulosa rangiana</i>)		Freshwater	
Goldenrod, Houghton's	Threatened	Dicot	No
(<i>Solidago houghtonii</i>)		Terrestrial	
Monkey-flower, Michigan	Endangered	Dicot	No
(<i>Mimulus glabratus</i> var. <i>michiganensis</i>)		Terrestrial, Freshwater	
Thistle, Pitcher's	Threatened	Dicot	No
(<i>Cirsium pitcheri</i>)		Terrestrial	
Beetle, Hungerford's Crawling Water	Endangered	Insect	No
(<i>Brychius hungerfordi</i>)		Freshwater	
Butterfly, Karner Blue	Endangered	Insect	No
(<i>Lycaeides melissa samuelis</i>)		Terrestrial	
Butterfly, Mitchell's Satyr	Endangered	Insect	No
(<i>Neonympha mitchellii mitchellii</i>)		Terrestrial	
Dragonfly, Hine's Emerald	Endangered	Insect	Yes
(<i>Somatochlora hineana</i>)		Freshwater, Terrestrial	
Bat, Indiana	Endangered	Mammal	Yes
(<i>Myotis sodalis</i>)		Subterranean, Terrestrial	

Michigan

(17) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Lynx, Canada	Threatened	Mammal	No
(<i>Lynx canadensis</i>)		Terrestrial	
Iris, Dwarf Lake	Threatened	Monocot	No
(<i>Iris lacustris</i>)		Terrestrial	
Orchid, Eastern Prairie Fringed	Threatened	Monocot	No
(<i>Platanthera leucophaea</i>)		Terrestrial	
Pogonia, Small Whorled	Threatened	Monocot	No
(<i>Isotria medeoloides</i>)		Terrestrial	
Snake, Northern Copperbelly Water	Threatened	Reptile	No
(<i>Nerodia erythrogaster neglecta</i>)		Freshwater, Terrestrial	

Minnesota

(10) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Plover, Piping	Endangered	Bird	Yes
(<i>Charadrius melodus</i>)		Terrestrial	
Mussel, Winged Mapleleaf	Endangered	Bivalve	No
(<i>Quadrula fragosa</i>)		Freshwater	
Pearlymussel, Higgins' Eye	Endangered	Bivalve	No
(<i>Lampsilis higginsii</i>)		Freshwater	
Clover, Prairie Bush	Threatened	Dicot	No
(<i>Lespedeza leptostachya</i>)		Terrestrial	
Roseroot, Leedy's	Threatened	Dicot	No
(<i>Sedum integrifolium ssp. leedyi</i>)		Terrestrial	
Shiner, Topeka	Endangered	Fish	Yes
(<i>Notropis topeka (=tristis)</i>)		Freshwater	
Butterfly, Karner Blue	Endangered	Insect	No
(<i>Lycaeides melissa samuelis</i>)		Terrestrial	
Lynx, Canada	Threatened	Mammal	No
(<i>Lynx canadensis</i>)		Terrestrial	
Lily, Minnesota Trout	Endangered	Monocot	No
(<i>Erythronium propullans</i>)		Terrestrial	
Orchid, Western Prairie Fringed	Threatened	Monocot	No
(<i>Platanthera praeclara</i>)		Terrestrial	

Mississippi

(30) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Frog, Dusky Gopher (Mississippi DPS)	Endangered	Amphibian	No
(<i>Rana capito sevosa</i>)		Terrestrial, Freshwater	
Crane, Mississippi Sandhill	Endangered	Bird	Yes
(<i>Grus canadensis pulla</i>)		Terrestrial, Freshwater	
Plover, Piping	Endangered	Bird	Yes
(<i>Charadrius melodus</i>)		Terrestrial	
Tern, Interior (population) Least	Endangered	Bird	No
(<i>Sterna antillarum</i>)		Terrestrial	
Woodpecker, Red-cockaded	Endangered	Bird	No
(<i>Picoides borealis</i>)		Terrestrial	

Mississippi (30) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Combshell, Southern (=Penitent mussel)	Endangered	Bivalve	No
(<i>Epioblasma penita</i>)		Freshwater	
Mucket, Orangenacre	Threatened	Bivalve	Yes
(<i>Lampsilis perovalis</i>)		Freshwater	
Mussel, Alabama Moccasinshell	Threatened	Bivalve	Yes
(<i>Medionidus acutissimus</i>)		Freshwater	
Mussel, Black (=Curtus' Mussel) Clubshell	Endangered	Bivalve	No
(<i>Pleurobema curtum</i>)		Freshwater	
Mussel, Heavy Pigtoe (=Judge Tait's Mussel)	Endangered	Bivalve	No
(<i>Pleurobema taitianum</i>)		Freshwater	
Mussel, Heelsplitter Inflated	Threatened	Bivalve	No
(<i>Potamilus inflatus</i>)		Freshwater	
Mussel, Ovate Clubshell	Endangered	Bivalve	Yes
(<i>Pleurobema perovatum</i>)		Freshwater	
Mussel, Southern Clubshell	Endangered	Bivalve	Yes
(<i>Pleurobema decisum</i>)		Freshwater	
Pearlymussel, Fat Pocketbook	Endangered	Bivalve	No
(<i>Potamilus capax</i>)		Freshwater	
Pondberry	Endangered	Dicot	No
(<i>Lindera melissifolia</i>)		Terrestrial	
Potato-bean, Price's	Threatened	Dicot	No
(<i>Apios priceana</i>)		Terrestrial	
Quillwort, Louisiana	Endangered	Ferns	No
(<i>Isoetes louisianensis</i>)		Freshwater, Terrestrial	
Darter, Bayou	Threatened	Fish	No
(<i>Etheostoma rubrum</i>)		Freshwater	
Sturgeon, Gulf	Threatened	Fish	Yes
(<i>Acipenser oxyrinchus desotoi</i>)		Saltwater, Freshwater	
Sturgeon, Pallid	Endangered	Fish	No
(<i>Scaphirhynchus albus</i>)		Freshwater	
Bat, Gray	Endangered	Mammal	No
(<i>Myotis grisescens</i>)		Subterraneous, Terrestrial	
Bat, Indiana	Endangered	Mammal	Yes
(<i>Myotis sodalis</i>)		Subterraneous, Terrestrial	
Bear, Louisiana Black	Threatened	Mammal	No
(<i>Ursus americanus luteolus</i>)		Terrestrial	
Sea turtle, green	Endangered	Reptile	No
(<i>Chelonia mydas</i>)		Saltwater	
Sea turtle, Kemp's ridley	Endangered	Reptile	No
(<i>Lepidochelys kempii</i>)		Saltwater	
Sea turtle, loggerhead	Threatened	Reptile	No
(<i>Caretta caretta</i>)		Saltwater	

Mississippi (30) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Snake, Eastern Indigo (<i>Drymarchon corais couperi</i>)	Threatened	Reptile Terrestrial	No
Tortoise, Gopher (<i>Gopherus polyphemus</i>)	Threatened	Reptile Terrestrial	No
Turtle, Ringed Sawback (<i>Graptemys oculifera</i>)	Threatened	Reptile Freshwater, Terrestrial	No
Turtle, Yellow-blotched Map (<i>Graptemys flavimaculata</i>)	Threatened	Reptile Freshwater, Terrestrial	No

Missouri (29) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Plover, Piping (<i>Charadrius melodus</i>)	Endangered	Bird Terrestrial	Yes
Tern, Interior (population) Least (<i>Sterna antillarum</i>)	Endangered	Bird Terrestrial	No
Mucket, Pink (Pearlymussel) (<i>Lampsilis abrupta</i>)	Endangered	Bivalve Freshwater	No
Mussel, Scaleshell (<i>Leptodea leptodon</i>)	Endangered	Bivalve Freshwater	No
Mussel, Winged Mapleleaf (<i>Quadrula fragosa</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Curtis' (<i>Epioblasma florentina curtisii</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Fat Pocketbook (<i>Potamilus capax</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Higgins' Eye (<i>Lampsilis higginsii</i>)	Endangered	Bivalve Freshwater	No
Crayfish, Cave (<i>Cambarus aculabrum</i>) (<i>Cambarus aculabrum</i>)	Endangered	Crustacean Freshwater	No
Aster, Decurrent False (<i>Boltonia decurrens</i>)	Threatened	Dicot Terrestrial, Freshwater	No
Bladderpod, Missouri (<i>Lesquerella filiformis</i>)	Threatened	Dicot Terrestrial	No
Clover, Running Buffalo (<i>Trifolium stoloniferum</i>)	Endangered	Dicot Terrestrial	No
Fruit, Earth (=geocarpon) (<i>Geocarpon minimum</i>)	Threatened	Dicot Terrestrial	No
Milkweed, Mead's (<i>Asclepias meadii</i>)	Threatened	Dicot Terrestrial	No
Pondberry (<i>Lindera melissifolia</i>)	Endangered	Dicot Terrestrial	No
Sneezeweed, Virginia (<i>Helenium virginicum</i>)	Threatened	Dicot Vernal pool	No
Cavefish, Ozark (<i>Amblyopsis rosae</i>)	Threatened	Fish Freshwater	No

Missouri

(29) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Chub, Humpback (<i>Gila cypha</i>)	Endangered	Fish Freshwater	Yes
Darter, Niangua (<i>Etheostoma nianguae</i>)	Threatened	Fish Freshwater	Yes
Madtom, Neosho (<i>Noturus placidus</i>)	Threatened	Fish Freshwater	No
Shiner, Topeka (<i>Notropis topeka (=tristis)</i>)	Endangered	Fish Freshwater	Yes
Sturgeon, Gulf (<i>Acipenser oxyrinchus desotoi</i>)	Threatened	Fish Saltwater, Freshwater	Yes
Sturgeon, Pallid (<i>Scaphirhynchus albus</i>)	Endangered	Fish Freshwater	No
Cavesnail, Tumbling Creek (<i>Antrobia culveri</i>)	Endangered	Gastropod Subterranean, Freshwater	No
Beetle, American Burying (<i>Nicrophorus americanus</i>)	Endangered	Insect Terrestrial	No
Dragonfly, Hine's Emerald (<i>Somatochlora hineana</i>)	Endangered	Insect Freshwater, Terrestrial	Yes
Bat, Gray (<i>Myotis grisescens</i>)	Endangered	Mammal Subterranean, Terrestrial	No
Bat, Indiana (<i>Myotis sodalis</i>)	Endangered	Mammal Subterranean, Terrestrial	Yes
Orchid, Western Prairie Fringed (<i>Platanthera praeclara</i>)	Threatened	Monocot Terrestrial	No

Montana

(8) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Catchfly, Spalding's (<i>Silene spaldingii</i>)	Threatened	Dicot Terrestrial	No
Howellia, Water (<i>Howellia aquatilis</i>)	Threatened	Dicot Freshwater	No
Sturgeon, Pallid (<i>Scaphirhynchus albus</i>)	Endangered	Fish Freshwater	No
Trout, Bull (<i>Salvelinus confluentus</i>)	Threatened	Fish Freshwater	No
Trout, Bull (Columbia River population) (<i>Salvelinus confluentus</i>)	Threatened	Fish Freshwater	Yes
Trout, Bull (Klamath River population) (<i>Salvelinus confluentus</i>)	Threatened	Fish Freshwater	Yes
Bear, Grizzly (<i>Ursus arctos horribilis</i>)	Threatened	Mammal Terrestrial	No
Ferret, Black-footed (<i>Mustela nigripes</i>)	Endangered	Mammal Terrestrial	No

Nebraska

(8) species:

Taxa Critical Habitat

Nebraska

(8) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Crane, Whooping (<i>Grus americana</i>)	Endangered	Bird Terrestrial, Freshwater	Yes
Plover, Piping (<i>Charadrius melodus</i>)	Endangered	Bird Terrestrial	Yes
Tern, Interior (population) Least (<i>Sterna antillarum</i>)	Endangered	Bird Terrestrial	No
Penstemon, Blowout (<i>Penstemon haydenii</i>)	Endangered	Dicot Terrestrial	No
Sturgeon, Pallid (<i>Scaphirhynchus albus</i>)	Endangered	Fish Freshwater	No
Beetle, Salt Creek Tiger (<i>Cicindela nevadica lincolniiana</i>)	Endangered	Insect Terrestrial	No
Ferret, Black-footed (<i>Mustela nigripes</i>)	Endangered	Mammal Terrestrial	No
Orchid, Western Prairie Fringed (<i>Platanthera praeclara</i>)	Threatened	Monocot Terrestrial	No

Nevada

(29) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Flycatcher, Southwestern Willow (<i>Empidonax traillii extimus</i>)	Endangered	Bird Terrestrial	Yes
Rail, Yuma Clapper (<i>Rallus longirostris yumanensis</i>)	Endangered	Bird Terrestrial	No
Blazing Star, Ash Meadows (<i>Mentzelia leucophylla</i>)	Threatened	Dicot Terrestrial	Yes
Centaury, Spring-loving (<i>Centaurium namophilum</i>)	Threatened	Dicot Terrestrial	Yes
Gumplant, Ash Meadows (<i>Grindelia fraxino-pratensis</i>)	Threatened	Dicot Terrestrial	Yes
Ivesia, Ash Meadows (<i>Ivesia kingii</i> var. <i>eremica</i>)	Threatened	Dicot Terrestrial	Yes
Milk-vetch, Ash Meadows (<i>Astragalus phoenix</i>)	Threatened	Dicot Terrestrial	Yes
Niterwort, Amargosa (<i>Nitrophila mohavensis</i>)	Endangered	Dicot Terrestrial	Yes
Sunray, Ash Meadows (<i>Enceliopsis nudicaulis</i> var. <i>corrugata</i>)	Threatened	Dicot Terrestrial	Yes
Chub, Bonytail (<i>Gila elegans</i>)	Endangered	Fish Freshwater	Yes
Chub, Pahrnagat Roundtail (<i>Gila robusta jordani</i>)	Endangered	Fish Freshwater	No
Chub, Virgin River (<i>Gila seminuda</i> (=robusta))	Endangered	Fish Freshwater	Yes
Dace, Ash Meadows Speckled (<i>Rhinichthys osculus nevadensis</i>)	Endangered	Fish Freshwater	Yes

Nevada

(29) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Dace, Moapa (<i>Moapa coriacea</i>)	Endangered	Fish Freshwater	No
Poolfish, Pahrump (= Pahrump Killifish) (<i>Empetrichthys latos</i>)	Endangered	Fish Freshwater	No
Pupfish, Ash Meadows Amargosa (<i>Cyprinodon nevadensis mionectes</i>)	Endangered	Fish Freshwater	Yes
Pupfish, Devils Hole (<i>Cyprinodon diabolis</i>)	Endangered	Fish Freshwater	No
Pupfish, Warm Springs (<i>Cyprinodon nevadensis pectoralis</i>)	Endangered	Fish Freshwater	No
Spinedace, Big Spring (<i>Lepidomeda mollispinis pratensis</i>)	Threatened	Fish Freshwater	Yes
Spinedace, White River (<i>Lepidomeda albivallis</i>)	Endangered	Fish Freshwater	Yes
Springfish, Hiko White River (<i>Crenichthys baileyi grandis</i>)	Endangered	Fish Freshwater	Yes
Springfish, Railroad Valley (<i>Crenichthys nevadae</i>)	Threatened	Fish Freshwater	Yes
Springfish, White River (<i>Crenichthys baileyi baileyi</i>)	Endangered	Fish Freshwater	Yes
Sucker, Razorback (<i>Xyrauchen texanus</i>)	Endangered	Fish Freshwater	Yes
Trout, Lahontan Cutthroat (<i>Oncorhynchus clarki henshawi</i>)	Threatened	Fish Freshwater	No
Woundfin (<i>Plagopterus argentissimus</i>)	Endangered	Fish Freshwater	Yes
Naucorid, Ash Meadows (<i>Ambrysus amargosus</i>)	Threatened	Insect Terrestrial	Yes
Ladies'-tresses, Ute (<i>Spiranthes diluvialis</i>)	Threatened	Monocot Terrestrial	No
Tortoise, Desert (<i>Gopherus agassizii</i>)	Threatened	Reptile Terrestrial	Yes

New Hampshire

(4) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Mussel, Dwarf Wedge (<i>Alasmodonta heterodon</i>)	Endangered	Bivalve Freshwater	No
Butterfly, Karner Blue (<i>Lycaeides melissa samuelis</i>)	Endangered	Insect Terrestrial	No
Bat, Indiana (<i>Myotis sodalis</i>)	Endangered	Mammal Subterranean, Terrestrial	Yes
Pogonia, Small Whorled (<i>Isotria medeoloides</i>)	Threatened	Monocot Terrestrial	No

New Jersey

(10) species:

Taxa **Critical Habitat**

New Jersey

(10) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Curlew, Eskimo (<i>Numenius borealis</i>)	Endangered	Bird Terrestrial	No
Plover, Piping (<i>Charadrius melodus</i>)	Endangered	Bird Terrestrial	Yes
Chaffseed, American (<i>Schwalbea americana</i>)	Endangered	Dicot Terrestrial	No
Joint-vetch, Sensitive (<i>Aeschynomene virginica</i>)	Threatened	Dicot Terrestrial, Brackish	No
Sturgeon, Shortnose (<i>Acipenser brevirostrum</i>)	Endangered	Fish Saltwater, Freshwater	No
Bat, Indiana (<i>Myotis sodalis</i>)	Endangered	Mammal Subterranean, Terrestrial	Yes
Beaked-rush, Knieskern's (<i>Rhynchospora knieskernii</i>)	Threatened	Monocot Terrestrial	No
Pink, Swamp (<i>Helonias bullata</i>)	Threatened	Monocot Terrestrial, Freshwater	No
Pogonia, Small Whorled (<i>Isotria medeoloides</i>)	Threatened	Monocot Terrestrial	No
Turtle, Bog (Northern population) (<i>Clemmys muhlenbergii</i>)	Threatened	Reptile Terrestrial, Freshwater	No

New Mexico

(45) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Frog, Chiricahua Leopard (<i>Rana chiricahuensis</i>)	Threatened	Amphibian Freshwater, Terrestrial	No
Crane, Whooping (<i>Grus americana</i>)	Endangered	Bird Terrestrial, Freshwater	Yes
Falcon, Northern Aplomado (<i>Falco femoralis septentrionalis</i>)	Endangered	Bird Terrestrial	No
Flycatcher, Southwestern Willow (<i>Empidonax traillii extimus</i>)	Endangered	Bird Terrestrial	Yes
Owl, Mexican Spotted (<i>Strix occidentalis lucida</i>)	Threatened	Bird Terrestrial	Yes
Plover, Piping (<i>Charadrius melodus</i>)	Endangered	Bird Terrestrial	Yes
Tern, Interior (population) Least (<i>Sterna antillarum</i>)	Endangered	Bird Terrestrial	No
Amphipod, Noel's (<i>Gammarus desperatus</i>)	Endangered	Crustacean Freshwater	No
Isopod, Socorro (<i>Thermosphaeroma thermophilus</i>)	Endangered	Crustacean Freshwater	No
Cactus, Knowlton (<i>Pediocactus knowltonii</i>)	Endangered	Dicot Terrestrial	No
Cactus, Kuenzler Hedgehog (<i>Echinocereus fendleri</i> var. <i>kuenzleri</i>)	Endangered	Dicot Terrestrial	No

New Mexico

(45) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Cactus, Lee Pincushion	Threatened	Dicot	No
(<i>Coryphantha sneedii</i> var. <i>leei</i>)		Terrestrial	
Cactus, Mesa Verde	Threatened	Dicot	No
(<i>Sclerocactus mesae-verdae</i>)		Terrestrial	
Cactus, Sneed Pincushion	Endangered	Dicot	No
(<i>Coryphantha sneedii</i> var. <i>sneedii</i>)		Terrestrial	
Fleabane, Zuni	Threatened	Dicot	No
(<i>Erigeron rhizomatus</i>)		Terrestrial	
Ipomopsis, Holy Ghost	Endangered	Dicot	No
(<i>Ipomopsis sancti-spiritus</i>)		Terrestrial	
Milk-vetch, Mancos	Endangered	Dicot	No
(<i>Astragalus humillimus</i>)		Terrestrial	
Pennyroyal, Todsen's	Endangered	Dicot	Yes
(<i>Hedeoma todsenii</i>)		Terrestrial	
Poppy, Sacramento Prickly	Endangered	Dicot	No
(<i>Argemone pleiacantha</i> ssp. <i>pinnatisecta</i>)		Terrestrial	
Sunflower, Pecos	Threatened	Dicot	No
(<i>Helianthus paradoxus</i>)		Terrestrial, Freshwater	
Thistle, Sacramento Mountains	Threatened	Dicot	No
(<i>Cirsium vinaceum</i>)		Terrestrial	
Wild-buckwheat, Gypsum	Threatened	Dicot	Yes
(<i>Eriogonum gypsophilum</i>)		Terrestrial	
Chub, Chihuahua	Threatened	Fish	No
(<i>Gila nigrescens</i>)		Freshwater	
Chub, Gila	Endangered	Fish	Yes
(<i>Gila intermedia</i>)		Freshwater	
Gambusia, Pecos	Endangered	Fish	No
(<i>Gambusia nobilis</i>)		Freshwater	
Minnow, Loach	Threatened	Fish	Yes
(<i>Tiaroga cobitis</i>)		Freshwater	
Minnow, Rio Grande Silvery	Endangered	Fish	Yes
(<i>Hybognathus amarus</i>)		Freshwater	
Shiner, Arkansas River	Threatened	Fish	Yes
(<i>Notropis girardi</i>)		Freshwater	
Shiner, Beautiful	Threatened	Fish	Yes
(<i>Cyprinella formosa</i>)		Freshwater	
Shiner, Pecos Bluntnose	Threatened	Fish	Yes
(<i>Notropis simus pecosensis</i>)		Freshwater	
Spikedace	Threatened	Fish	Yes
(<i>Meda fulgida</i>)		Freshwater	
Squawfish, Colorado	Endangered	Fish	Yes
(<i>Ptychocheilus lucius</i>)		Freshwater	

New Mexico

(45) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Sucker, Razorback (<i>Xyrauchen texanus</i>)	Endangered	Fish Freshwater	Yes
Topminnow, Gila (Yaqui) (<i>Poeciliopsis occidentalis</i>)	Endangered	Fish Freshwater	No
Trout, Gila (<i>Oncorhynchus gilae</i>)	Endangered	Fish Freshwater	No
Snail, Pecos Assiminea (<i>Assiminea pecos</i>)	Endangered	Gastropod Freshwater	Yes
Springsnail, Alamosa (<i>Tryonia alamosae</i>)	Endangered	Gastropod Freshwater	No
Springsnail, Koster's (<i>Juturnia kosteri</i>)	Endangered	Gastropod Terrestrial	No
Springsnail, Roswell (<i>Pyrgulopsis roswellensis</i>)	Endangered	Gastropod Freshwater	No
Springsnail, Socorro (<i>Pyrgulopsis neomexicana</i>)	Endangered	Gastropod Freshwater	No
Bat, Lesser (=Sanborn's) Long-nosed (<i>Leptonycteris curasoae yerbabuenae</i>)	Endangered	Mammal Subterranean, Terrestrial	No
Bat, Mexican Long-nosed (<i>Leptonycteris nivalis</i>)	Endangered	Mammal Subterranean, Terrestrial	No
Ferret, Black-footed (<i>Mustela nigripes</i>)	Endangered	Mammal Terrestrial	No
Jaguar (<i>Panthera onca</i>)	Endangered	Mammal Terrestrial	No
Rattlesnake, New Mexican Ridge-nosed (<i>Crotalus willardi obscurus</i>)	Threatened	Reptile Terrestrial	Yes

North Carolina

(55) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Spider, Spruce-fir Moss (<i>Microhexura montivaga</i>)	Endangered	Arachnid Terrestrial	Yes
Plover, Piping (<i>Charadrius melodus</i>)	Endangered	Bird Terrestrial	Yes
Stork, Wood (<i>Mycteria americana</i>)	Endangered	Bird Terrestrial	No
Tern, Roseate (<i>Sterna dougallii dougallii</i>)	Endangered	Bird Terrestrial	No
Woodpecker, Red-cockaded (<i>Picoides borealis</i>)	Endangered	Bird Terrestrial	No
Elktoe, Appalachian (<i>Alasmidonta raveneliana</i>)	Endangered	Bivalve Freshwater	Yes
Mussel, Dwarf Wedge (<i>Alasmidonta heterodon</i>)	Endangered	Bivalve Freshwater	No
Mussel, Heelsplitter Carolina (<i>Lasmigona decorata</i>)	Endangered	Bivalve Freshwater	Yes

North Carolina

(55) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Mussel, Oyster	Endangered	Bivalve	Yes
(<i>Epioblasma capsaeformis</i>)		Freshwater	
Pearlymussel, Little-wing	Endangered	Bivalve	No
(<i>Pegias fabula</i>)		Freshwater	
Purple Bean	Endangered	Bivalve	Yes
(<i>Villosa perpurpurea</i>)		Freshwater	
Spiny mussel, James River	Endangered	Bivalve	No
(<i>Pleurobema collina</i>)		Freshwater	
Spiny mussel, Tar River	Endangered	Bivalve	No
(<i>Elliptio steinstansana</i>)		Freshwater	
Amaranth, Seabeach	Threatened	Dicot	No
(<i>Amaranthus pumilus</i>)		Coastal (neritic)	
Avens, Spreading	Endangered	Dicot	No
(<i>Geum radiatum</i>)		Terrestrial	
Bittercress, Small-anthered	Endangered	Dicot	No
(<i>Cardamine micranthera</i>)		Terrestrial	
Blazing Star, Heller's	Threatened	Dicot	No
(<i>Liatris helleri</i>)		Terrestrial	
Bluet, Roan Mountain	Endangered	Dicot	No
(<i>Hedyotis purpurea</i> var. <i>montana</i>)		Terrestrial	
Chaffseed, American	Endangered	Dicot	No
(<i>Schwalbea americana</i>)		Terrestrial	
Coneflower, Smooth	Endangered	Dicot	No
(<i>Echinacea laevigata</i>)		Terrestrial	
Dropwort, Canby's	Endangered	Dicot	No
(<i>Oxypolis canbyi</i>)		Terrestrial, Freshwater	
Goldenrod, Blue Ridge	Threatened	Dicot	No
(<i>Solidago spithamea</i>)		Terrestrial	
Harperella	Endangered	Dicot	No
(<i>Ptilimnium nodosum</i>)		Freshwater	
Heartleaf, Dwarf-flowered	Threatened	Dicot	No
(<i>Hexastylis naniflora</i>)		Terrestrial	
Heather, Mountain Golden	Threatened	Dicot	Yes
(<i>Hudsonia montana</i>)		Terrestrial	
Joint-vetch, Sensitive	Threatened	Dicot	No
(<i>Aeschynomene virginica</i>)		Terrestrial, Brackish	
Loosestrife, Rough-leaved	Endangered	Dicot	No
(<i>Lysimachia asperulaefolia</i>)		Terrestrial	
Meadowrue, Cooley's	Endangered	Dicot	No
(<i>Thalictrum cooleyi</i>)		Terrestrial	
Pitcher-plant, Mountain Sweet	Endangered	Dicot	No
(<i>Sarracenia rubra</i> ssp. <i>jonesii</i>)		Freshwater, Terrestrial	

North Carolina

(55) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Pondberry	Endangered	Dicot	No
(<i>Lindera melissifolia</i>)		Terrestrial	
Spiraea, Virginia	Threatened	Dicot	No
(<i>Spiraea virginiana</i>)		Terrestrial	
Sumac, Michaux's	Endangered	Dicot	No
(<i>Rhus michauxii</i>)		Terrestrial	
Sunflower, Schweinitz's	Endangered	Dicot	No
(<i>Helianthus schweinitzii</i>)		Terrestrial	
Chub, Spottfin	Threatened	Fish	Yes
(<i>Erimonax monachus</i>)		Freshwater	
Shiner, Cape Fear	Endangered	Fish	Yes
(<i>Notropis mekistocholas</i>)		Freshwater	
Silverside, Waccamaw	Threatened	Fish	Yes
(<i>Menidia extensa</i>)		Freshwater	
Sturgeon, Shortnose	Endangered	Fish	No
(<i>Acipenser brevirostrum</i>)		Saltwater, Freshwater	
Snail, Noonday	Threatened	Gastropod	No
(<i>Mesodon clarki nantahala</i>)		Terrestrial	
Butterfly, Saint Francis' Satyr	Endangered	Insect	No
(<i>Neonympha mitchellii francisci</i>)		Terrestrial	
Lichen, Rock Gnome	Endangered	Lichen	No
(<i>Gymnoderma lineare</i>)		Terrestrial	
Bat, Gray	Endangered	Mammal	No
(<i>Myotis grisescens</i>)		Subterranean, Terrestrial	
Bat, Indiana	Endangered	Mammal	Yes
(<i>Myotis sodalis</i>)		Subterranean, Terrestrial	
Bat, Virginia Big-eared	Endangered	Mammal	Yes
(<i>Corynorhinus (=Plecotus) townsendii virginianus</i>)		Terrestrial, Subterranean	
Squirrel, Carolina Northern Flying	Endangered	Mammal	No
(<i>Glaucomys sabrinus coloratus</i>)		Terrestrial	
Manatee, West Indian	Endangered	Marine mml	Yes
(<i>Trichechus manatus</i>)		Saltwater	
Arrowhead, Bunched	Endangered	Monocot	No
(<i>Sagittaria fasciculata</i>)		Freshwater	
Irisette, White	Endangered	Monocot	No
(<i>Sisyrinchium dichotomum</i>)		Terrestrial	
Pink, Swamp	Threatened	Monocot	No
(<i>Helonias bullata</i>)		Terrestrial, Freshwater	
Pogonia, Small Whorled	Threatened	Monocot	No
(<i>Isotria medeoloides</i>)		Terrestrial	
Sedge, Golden	Endangered	Monocot	No
(<i>Carex lutea</i>)		Terrestrial	

North Carolina

(55) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Sea turtle, green (<i>Chelonia mydas</i>)	Endangered	Reptile Saltwater	No
Sea turtle, hawksbill (<i>Eretmochelys imbricata</i>)	Endangered	Reptile Saltwater	Yes
Sea turtle, Kemp's ridley (<i>Lepidochelys kempii</i>)	Endangered	Reptile Saltwater	No
Sea turtle, leatherback (<i>Dermochelys coriacea</i>)	Endangered	Reptile Saltwater	Yes
Sea turtle, loggerhead (<i>Caretta caretta</i>)	Threatened	Reptile Saltwater	No

North Dakota

(1) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Orchid, Western Prairie Fringed (<i>Platanthera praeclara</i>)	Threatened	Monocot Terrestrial	No

Ohio

(22) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Plover, Piping (<i>Charadrius melodus</i>)	Endangered	Bird Terrestrial	Yes
Fanshell (<i>Cyprogenia stegaria</i>)	Endangered	Bivalve Freshwater	No
Mucket, Pink (Pearlymussel) (<i>Lampsilis abrupta</i>)	Endangered	Bivalve Freshwater	No
Mussel, Clubshell (<i>Pleurobema clava</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Purple Cat's Paw (<i>Epioblasma obliquata obliquata</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, White Cat's Paw (<i>Epioblasma obliquata perobliqua</i>)	Endangered	Bivalve Freshwater	No
Riffleshell, Northern (<i>Epioblasma torulosa rangiana</i>)	Endangered	Bivalve Freshwater	No
Clover, Running Buffalo (<i>Trifolium stoloniferum</i>)	Endangered	Dicot Terrestrial	No
Daisy, Lakeside (<i>Hymenoxys herbacea</i>)	Threatened	Dicot Freshwater	No
Monkshood, Northern Wild (<i>Aconitum noveboracense</i>)	Threatened	Dicot Terrestrial	No
Spiraea, Virginia (<i>Spiraea virginiana</i>)	Threatened	Dicot Terrestrial	No
Madtom, Scioto (<i>Noturus trautmani</i>)	Endangered	Fish Freshwater	No
Beetle, American Burying (<i>Nicrophorus americanus</i>)	Endangered	Insect Terrestrial	No
Butterfly, Karner Blue (<i>Lycaeides melissa samuelis</i>)	Endangered	Insect Terrestrial	No

Ohio

(22) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Butterfly, Mitchell's Satyr	Endangered	Insect	No
(<i>Neonympha mitchellii mitchellii</i>)		Terrestrial	
Dragonfly, Hine's Emerald	Endangered	Insect	Yes
(<i>Somatochlora hineana</i>)		Freshwater, Terrestrial	
Bat, Gray	Endangered	Mammal	No
(<i>Myotis grisescens</i>)		Subterranean, Terrestrial	
Bat, Indiana	Endangered	Mammal	Yes
(<i>Myotis sodalis</i>)		Subterranean, Terrestrial	
Orchid, Eastern Prairie Fringed	Threatened	Monocot	No
(<i>Platanthera leucophaea</i>)		Terrestrial	
Pogonia, Small Whorled	Threatened	Monocot	No
(<i>Isotria medeoloides</i>)		Terrestrial	
Snake, Lake Erie Water	Threatened	Reptile	No
(<i>Nerodia sipedon insularum</i>)		Terrestrial, Freshwater	
Snake, Northern Copperbelly Water	Threatened	Reptile	No
(<i>Nerodia erythrogaster neglecta</i>)		Freshwater, Terrestrial	

Oklahoma

(18) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Crane, Whooping	Endangered	Bird	Yes
(<i>Grus americana</i>)		Terrestrial, Freshwater	
Curlew, Eskimo	Endangered	Bird	No
(<i>Numenius borealis</i>)		Terrestrial	
Plover, Piping	Endangered	Bird	Yes
(<i>Charadrius melodus</i>)		Terrestrial	
Tern, Interior (population) Least	Endangered	Bird	No
(<i>Sterna antillarum</i>)		Terrestrial	
Vireo, Black-capped	Endangered	Bird	No
(<i>Vireo atricapilla</i>)		Terrestrial	
Woodpecker, Red-cockaded	Endangered	Bird	No
(<i>Picoides borealis</i>)		Terrestrial	
Mussel, Scaleshell	Endangered	Bivalve	No
(<i>Leptodea leptodon</i>)		Freshwater	
Rock-pocketbook, Ouachita (=Wheeler's pm)	Endangered	Bivalve	No
(<i>Arkansia wheeleri</i>)		Freshwater	
Cavefish, Ozark	Threatened	Fish	No
(<i>Amblyopsis rosae</i>)		Freshwater	
Darter, Leopard	Threatened	Fish	Yes
(<i>Percina pantherina</i>)		Freshwater	
Madtom, Neosho	Threatened	Fish	No
(<i>Noturus placidus</i>)		Freshwater	
Shiner, Arkansas River	Threatened	Fish	Yes
(<i>Notropis girardi</i>)		Freshwater	
Beetle, American Burying	Endangered	Insect	No
(<i>Nicrophorus americanus</i>)		Terrestrial	

Oklahoma

(18) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Bat, Gray	Endangered	Mammal	No
(<i>Myotis grisescens</i>)		Subterraneous, Terrestrial	
Bat, Indiana	Endangered	Mammal	Yes
(<i>Myotis sodalis</i>)		Subterraneous, Terrestrial	
Bat, Ozark Big-eared	Endangered	Mammal	No
(<i>Corynorhinus (=Plecotus) townsendii ingens</i>)		Terrestrial, Subterraneous	
Orchid, Eastern Prairie Fringed	Threatened	Monocot	No
(<i>Platanthera leucophaea</i>)		Terrestrial	
Orchid, Western Prairie Fringed	Threatened	Monocot	No
(<i>Platanthera praeclara</i>)		Terrestrial	

Oregon

(36) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Murrelet, Marbled	Threatened	Bird	Yes
(<i>Brachyramphus marmoratus marmoratus</i>)		Freshwater, Terrestrial, Saltwater	
Owl, Northern Spotted	Threatened	Bird	Yes
(<i>Strix occidentalis caurina</i>)		Terrestrial	
Plover, Western Snowy	Threatened	Bird	Yes
(<i>Charadrius alexandrinus nivosus</i>)		Terrestrial	
Fairy Shrimp, Vernal Pool	Threatened	Crustacean	Yes
(<i>Branchinecta lynchi</i>)		Vernal pool	
Catchfly, Spalding's	Threatened	Dicot	No
(<i>Silene spaldingii</i>)		Terrestrial	
Checker-mallow, Nelson's	Threatened	Dicot	No
(<i>Sidalcea nelsoniana</i>)		Terrestrial	
Daisy, Willamette	Endangered	Dicot	No
(<i>Erigeron decumbens</i> var. <i>decumbens</i>)		Terrestrial	
Four-o'clock, Macfarlane's	Threatened	Dicot	No
(<i>Mirabilis macfarlanei</i>)		Terrestrial	
Lomatium, Bradshaw's	Endangered	Dicot	No
(<i>Lomatium bradshawii</i>)		Terrestrial, Freshwater	
Lomatium, Cook's	Endangered	Dicot	No
(<i>Lomatium cookii</i>)		Vernal pool	
Lupine, Kincaid's	Threatened	Dicot	No
(<i>Lupinus sulphureus (=oreganus) ssp. kincaidii (=var. kincaidii)</i>)		Terrestrial	
Meadowfoam, Large-flowered Woolly	Endangered	Dicot	No
(<i>Limnanthes floccosa ssp. Grandiflora</i>)		Vernal pool	
Popcornflower, Rough	Endangered	Dicot	No
(<i>Plagiobothrys hirtus</i>)		Vernal pool	
Thelypody, Howell's Spectacular	Threatened	Dicot	No
(<i>Thelypodium howellii spectabilis</i>)		Terrestrial	
Chub, Oregon	Endangered	Fish	No
(<i>Oregonichthys crameri</i>)		Freshwater	
Salmon, Chinook (Lower Columbia River)	Threatened	Fish	Yes
(<i>Oncorhynchus (=Salmo) tshawytscha</i>)		Freshwater, Brackish, Saltwater	

Oregon

(36) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Salmon, Chinook (Snake River Fall Run)	Threatened	Fish	No
(<i>Oncorhynchus</i> (=Salmo) <i>tshawytscha</i>)		Freshwater, Saltwater, Brackish	
Salmon, Chinook (Snake River spring/summer)	Threatened	Fish	Yes
(<i>Oncorhynchus</i> (=Salmo) <i>tshawytscha</i>)		Brackish, Saltwater, Freshwater	
Salmon, Chinook (Upper Columbia River Spring)	Endangered	Fish	Yes
(<i>Oncorhynchus</i> (=Salmo) <i>tshawytscha</i>)		Freshwater, Saltwater, Brackish	
Salmon, Chinook (Upper Willamette River)	Threatened	Fish	Yes
(<i>Oncorhynchus</i> (=Salmo) <i>tshawytscha</i>)		Saltwater, Brackish, Freshwater	
Salmon, Chum (Columbia River population)	Threatened	Fish	Yes
(<i>Oncorhynchus</i> (=Salmo) <i>keta</i>)		Brackish, Freshwater, Saltwater	
Salmon, Coho (Southern OR/Northern CA Coast)	Threatened	Fish	Yes
(<i>Oncorhynchus</i> (=Salmo) <i>kisutch</i>)		Freshwater, Brackish, Saltwater	
Salmon, Sockeye (Snake River population)	Endangered	Fish	No
(<i>Oncorhynchus</i> (=Salmo) <i>nerka</i>)		Brackish, Saltwater, Freshwater	
Steelhead, (Lower Columbia River population)	Threatened	Fish	Yes
(<i>Oncorhynchus</i> (=Salmo) <i>mykiss</i>)		Brackish, Freshwater, Saltwater	
Steelhead, (Middle Columbia River population)	Threatened	Fish	Yes
(<i>Oncorhynchus</i> (=Salmo) <i>mykiss</i>)		Freshwater, Saltwater, Brackish	
Steelhead, (Snake River Basin population)	Threatened	Fish	Yes
(<i>Oncorhynchus</i> (=Salmo) <i>mykiss</i>)		Freshwater, Brackish, Saltwater	
Steelhead, (Upper Columbia River population)	Threatened	Fish	Yes
(<i>Oncorhynchus</i> (=Salmo) <i>mykiss</i>)		Brackish, Saltwater, Freshwater	
Steelhead, (Upper Willamette River population)	Threatened	Fish	Yes
(<i>Oncorhynchus</i> (=Salmo) <i>mykiss</i>)		Brackish, Saltwater, Freshwater	
Trout, Bull	Threatened	Fish	No
(<i>Salvelinus confluentus</i>)		Freshwater	
Trout, Bull (Columbia River population)	Threatened	Fish	Yes
(<i>Salvelinus confluentus</i>)		Freshwater	
Trout, Bull (Klamath River population)	Threatened	Fish	Yes
(<i>Salvelinus confluentus</i>)		Freshwater	
Butterfly, Fender's Blue	Endangered	Insect	No
(<i>Icaricia icarioides fenderi</i>)		Terrestrial	
Butterfly, Oregon Silverspot	Threatened	Insect	Yes
(<i>Speyeria zerene hippolyta</i>)		Terrestrial	
Deer, Columbian White-tailed	Endangered	Mammal	No
(<i>Odocoileus virginianus leucurus</i>)		Terrestrial	
Fritillary, Gentner's	Endangered	Monocot	No
(<i>Fritillaria gentneri</i>)		Terrestrial	
Lily, Western	Endangered	Monocot	No
(<i>Lilium occidentale</i>)		Terrestrial	

Pennsylvania

(8) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Plover, Piping	Endangered	Bird	Yes
(<i>Charadrius melodus</i>)		Terrestrial	

Pennsylvania (8) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Mussel, Clubshell (<i>Pleurobema clava</i>)	Endangered	Bivalve Freshwater	No
Riffleshell, Northern (<i>Epioblasma torulosa rangiana</i>)	Endangered	Bivalve Freshwater	No
Bat, Indiana (<i>Myotis sodalis</i>)	Endangered	Mammal Subterranean, Terrestrial	Yes
Squirrel, Delmarva Peninsula Fox (<i>Sciurus niger cinereus</i>)	Endangered	Mammal Terrestrial	No
Bulrush, Northeastern (=Barbed Bristle) (<i>Scirpus ancistrochaetus</i>)	Endangered	Monocot Terrestrial, Freshwater	No
Pogonia, Small Whorled (<i>Isotria medeoloides</i>)	Threatened	Monocot Terrestrial	No
Turtle, Bog (Northern population) (<i>Clemmys muhlenbergii</i>)	Threatened	Reptile Terrestrial, Freshwater	No

Rhode Island (6) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Plover, Piping (<i>Charadrius melodus</i>)	Endangered	Bird Terrestrial	Yes
Gerardia, Sandplain (<i>Agalinis acuta</i>)	Endangered	Dicot Terrestrial	No
Sturgeon, Shortnose (<i>Acipenser brevirostrum</i>)	Endangered	Fish Saltwater, Freshwater	No
Beetle, American Burying (<i>Nicrophorus americanus</i>)	Endangered	Insect Terrestrial	No
Bat, Indiana (<i>Myotis sodalis</i>)	Endangered	Mammal Subterranean, Terrestrial	Yes
Pogonia, Small Whorled (<i>Isotria medeoloides</i>)	Threatened	Monocot Terrestrial	No

South Carolina (36) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Salamander, Flatwoods (<i>Ambystoma cingulatum</i>)	Threatened	Amphibian Freshwater, Vernal pool, Terrestrial	No
Plover, Piping (<i>Charadrius melodus</i>)	Endangered	Bird Terrestrial	Yes
Stork, Wood (<i>Mycteria americana</i>)	Endangered	Bird Terrestrial	No
Warbler, Bachman's (<i>Vermivora bachmanii</i>)	Endangered	Bird Terrestrial	No
Woodpecker, Red-cockaded (<i>Picoides borealis</i>)	Endangered	Bird Terrestrial	No
Mussel, Heelsplitter Carolina (<i>Lasmigona decorata</i>)	Endangered	Bivalve Freshwater	Yes
Amaranth, Seabeach (<i>Amaranthus pumilus</i>)	Threatened	Dicot Coastal (neritic)	No

South Carolina

(36) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Amphianthus, Little (<i>Amphianthus pusillus</i>)	Threatened	Dicot Freshwater	No
Chaffseed, American (<i>Schwalbea americana</i>)	Endangered	Dicot Terrestrial	No
Coneflower, Smooth (<i>Echinacea laevigata</i>)	Endangered	Dicot Terrestrial	No
Dropwort, Canby's (<i>Oxypolis canbyi</i>)	Endangered	Dicot Terrestrial, Freshwater	No
Gooseberry, Miccosukee (<i>Ribes echinellum</i>)	Threatened	Dicot Terrestrial	No
Harperella (<i>Ptilimnium nodosum</i>)	Endangered	Dicot Freshwater	No
Heartleaf, Dwarf-flowered (<i>Hexastylis naniflora</i>)	Threatened	Dicot Terrestrial	No
Loosestrife, Rough-leaved (<i>Lysimachia asperulaefolia</i>)	Endangered	Dicot Terrestrial	No
Pitcher-plant, Mountain Sweet (<i>Sarracenia rubra</i> ssp. <i>jonesii</i>)	Endangered	Dicot Freshwater, Terrestrial	No
Pondberry (<i>Lindera melissifolia</i>)	Endangered	Dicot Terrestrial	No
Sunflower, Schweinitz's (<i>Helianthus schweinitzii</i>)	Endangered	Dicot Terrestrial	No
Quillwort, Black-spored (<i>Isoetes melanospora</i>)	Endangered	Ferns Vernal pool	No
Sturgeon, Shortnose (<i>Acipenser brevirostrum</i>)	Endangered	Fish Saltwater, Freshwater	No
Lichen, Rock Gnome (<i>Gymnoderma lineare</i>)	Endangered	Lichen Terrestrial	No
Bat, Indiana (<i>Myotis sodalis</i>)	Endangered	Mammal Subterranean, Terrestrial	Yes
Manatee, West Indian (<i>Trichechus manatus</i>)	Endangered	Marine mml Saltwater	Yes
Whale, Finback (<i>Balaenoptera physalus</i>)	Endangered	Marine mml Saltwater	No
Whale, Humpback (<i>Megaptera novaeangliae</i>)	Endangered	Marine mml Saltwater	No
Arrowhead, Bunched (<i>Sagittaria fasciculata</i>)	Endangered	Monocot Freshwater	No
Irisette, White (<i>Sisyrinchium dichotomum</i>)	Endangered	Monocot Terrestrial	No
Pink, Swamp (<i>Helonias bullata</i>)	Threatened	Monocot Terrestrial, Freshwater	No

South Carolina

(36) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Pogonia, Small Whorled (<i>Isotria medeoloides</i>)	Threatened	Monocot Terrestrial	No
Trillium, Persistent (<i>Trillium persistens</i>)	Endangered	Monocot Terrestrial	No
Trillium, Relict (<i>Trillium reliquum</i>)	Endangered	Monocot Terrestrial	No
Sea turtle, green (<i>Chelonia mydas</i>)	Endangered	Reptile Saltwater	No
Sea turtle, Kemp's ridley (<i>Lepidochelys kempii</i>)	Endangered	Reptile Saltwater	No
Sea turtle, leatherback (<i>Dermochelys coriacea</i>)	Endangered	Reptile Saltwater	Yes
Sea turtle, loggerhead (<i>Caretta caretta</i>)	Threatened	Reptile Saltwater	No
Snake, Eastern Indigo (<i>Drymarchon corais couperi</i>)	Threatened	Reptile Terrestrial	No

South Dakota

(8) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Crane, Whooping (<i>Grus americana</i>)	Endangered	Bird Terrestrial, Freshwater	Yes
Plover, Piping (<i>Charadrius melodus</i>)	Endangered	Bird Terrestrial	Yes
Tern, Interior (population) Least (<i>Sterna antillarum</i>)	Endangered	Bird Terrestrial	No
Shiner, Topeka (<i>Notropis topeka</i> (=tristis))	Endangered	Fish Freshwater	Yes
Sturgeon, Pallid (<i>Scaphirhynchus albus</i>)	Endangered	Fish Freshwater	No
Beetle, American Burying (<i>Nicrophorus americanus</i>)	Endangered	Insect Terrestrial	No
Ferret, Black-footed (<i>Mustela nigripes</i>)	Endangered	Mammal Terrestrial	No
Orchid, Western Prairie Fringed (<i>Platanthera praeclara</i>)	Threatened	Monocot Terrestrial	No

Tennessee

(80) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Spider, Spruce-fir Moss (<i>Microhexura montivaga</i>)	Endangered	Arachnid Terrestrial	Yes
Stork, Wood (<i>Mycteria americana</i>)	Endangered	Bird Terrestrial	No
Tern, Interior (population) Least (<i>Sterna antillarum</i>)	Endangered	Bird Terrestrial	No
Woodpecker, Red-cockaded (<i>Picoides borealis</i>)	Endangered	Bird Terrestrial	No

Tennessee

(80) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Combshell, Upland	Endangered	Bivalve	Yes
(<i>Epioblasma metastrata</i>)		Freshwater	
Elktoe, Appalachian	Endangered	Bivalve	Yes
(<i>Alasmidonta raveneliana</i>)		Freshwater	
Fanshell	Endangered	Bivalve	No
(<i>Cyprogenia stegaria</i>)		Freshwater	
Kidneyshell, Triangular	Endangered	Bivalve	Yes
(<i>Ptychobranhus greenii</i>)		Freshwater	
Mucket, Pink (Pearlymussel)	Endangered	Bivalve	No
(<i>Lampsilis abrupta</i>)		Freshwater	
Mussel, Alabama Moccasinshell	Threatened	Bivalve	Yes
(<i>Medionidus acutissimus</i>)		Freshwater	
Mussel, Coosa Moccasinshell	Endangered	Bivalve	Yes
(<i>Medionidus parvulus</i>)		Freshwater	
Mussel, Cumberland Combshell	Endangered	Bivalve	Yes
(<i>Epioblasma brevidens</i>)		Freshwater	
Mussel, Cumberland Elktoe	Endangered	Bivalve	Yes
(<i>Alasmidonta atropurpurea</i>)		Freshwater	
Mussel, Cumberland Pigtoe	Endangered	Bivalve	No
(<i>Pleurobema gibberum</i>)		Freshwater	
Mussel, Fine-lined Pocketbook	Threatened	Bivalve	Yes
(<i>Lampsilis altilis</i>)		Freshwater	
Mussel, Fine-rayed Pigtoe	Endangered	Bivalve	No
(<i>Fusconaia cuneolus</i>)		Freshwater	
Mussel, Ovate Clubshell	Endangered	Bivalve	Yes
(<i>Pleurobema perovatum</i>)		Freshwater	
Mussel, Oyster	Endangered	Bivalve	Yes
(<i>Epioblasma capsaeformis</i>)		Freshwater	
Mussel, Ring Pink (=Golf Stick Pearly)	Endangered	Bivalve	No
(<i>Obovaria retusa</i>)		Freshwater	
Mussel, Rough Pigtoe	Endangered	Bivalve	No
(<i>Pleurobema plenum</i>)		Freshwater	
Mussel, Shiny Pigtoe	Endangered	Bivalve	No
(<i>Fusconaia cor</i>)		Freshwater	
Mussel, Southern Pigtoe	Endangered	Bivalve	Yes
(<i>Pleurobema georgianum</i>)		Freshwater	
Pearlymussel, Alabama Lamp	Endangered	Bivalve	No
(<i>Lampsilis virescens</i>)		Freshwater	
Pearlymussel, Appalachian Monkeyface	Endangered	Bivalve	No
(<i>Quadrula sparsa</i>)		Freshwater	
Pearlymussel, Birdwing	Endangered	Bivalve	No
(<i>Conradilla caelata</i>)		Freshwater	

Tennessee

(80) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Pearlymussel, Cracking (<i>Hemistena lata</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Cumberland Bean (<i>Villosa trabalis</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Cumberland Monkeyface (<i>Quadrula intermedia</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Dromedary (<i>Dromus dromas</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Green-blossom (<i>Epioblasma torulosa gubernaculum</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Little-wing (<i>Pegias fabula</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Orange-footed (<i>Plethobasus cooperianus</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Pale Lilliput (<i>Toxolasma cylindrellus</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Purple Cat's Paw (<i>Epioblasma obliquata obliquata</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Tubercled-blossom (<i>Epioblasma torulosa torulosa</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Turgid-blossom (<i>Epioblasma turgidula</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, White Wartyback (<i>Plethobasus cicatricosus</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Yellow-blossom (<i>Epioblasma florentina florentina</i>)	Endangered	Bivalve Freshwater	No
Purple Bean (<i>Villosa perpurpurea</i>)	Endangered	Bivalve Freshwater	Yes
Rabbitsfoot, Rough (<i>Quadrula cylindrica strigillata</i>)	Endangered	Bivalve Freshwater	Yes
Riffleshell, Tan (<i>Epioblasma florentina walkeri</i> (=E. walkeri))	Endangered	Bivalve Freshwater	No
Crayfish, Nashville (<i>Orconectes shoupi</i>)	Endangered	Crustacean Freshwater	No
Aster, Ruth's Golden (<i>Pityopsis ruthii</i>)	Endangered	Dicot Terrestrial	No
Avens, Spreading (<i>Geum radiatum</i>)	Endangered	Dicot Terrestrial	No
Bladderpod, Spring Creek (<i>Lesquerella perforata</i>)	Endangered	Dicot Floodplain	No
Clover, Leafy Prairie (<i>Dalea foliosa</i>)	Endangered	Dicot Terrestrial	No

Tennessee

(80) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Coneflower, Tennessee Purple (<i>Echinacea tennesseensis</i>)	Endangered	Dicot Terrestrial	No
Ground-plum, Guthrie's (<i>Astragalus bibullatus</i>)	Endangered	Dicot Terrestrial	No
Pitcher-plant, Green (<i>Sarracenia oreophila</i>)	Endangered	Dicot Terrestrial, Freshwater	No
Potato-bean, Price's (<i>Apios priceana</i>)	Threatened	Dicot Terrestrial	No
Rock-cress, Large (=Braun's) (<i>Arabis perstellata</i> E. L. Braun var. <i>ampla</i> Rollins)	Endangered	Dicot Terrestrial	Yes
Rock-cress, Small (<i>Arabis perstellata</i> E. L. Braun var. <i>perstellata</i> Fernald)	Endangered	Dicot Terrestrial	Yes
Rosemary, Cumberland (<i>Conradina verticillata</i>)	Threatened	Dicot Terrestrial	No
Sandwort, Cumberland (<i>Arenaria cumberlandensis</i>)	Endangered	Dicot Terrestrial	No
Skullcap, Large-flowered (<i>Scutellaria montana</i>)	Threatened	Dicot Terrestrial	No
Spiraea, Virginia (<i>Spiraea virginiana</i>)	Threatened	Dicot Terrestrial	No
Fern, American hart's-tongue (<i>Asplenium scolopendrium</i> var. <i>americanum</i>)	Threatened	Ferns Terrestrial	No
Chub, Slender (<i>Erimystax cahni</i>)	Threatened	Fish Freshwater	Yes
Chub, Spotfin (<i>Erimonax monachus</i>)	Threatened	Fish Freshwater	Yes
Dace, Blackside (<i>Phoxinus cumberlandensis</i>)	Threatened	Fish Freshwater	No
Darter, Amber (<i>Percina antesella</i>)	Endangered	Fish Freshwater	Yes
Darter, Bluemask (=jewel) (<i>Etheostoma</i> /)	Endangered	Fish Freshwater	No
Darter, Boulder (<i>Etheostoma wapiti</i>)	Endangered	Fish Freshwater	No
Darter, Duskytail (<i>Etheostoma percnurum</i>)	Endangered	Fish Freshwater	No
Darter, Slackwater (<i>Etheostoma boschungii</i>)	Threatened	Fish Freshwater	Yes
Darter, Snail (<i>Percina tanasi</i>)	Threatened	Fish Freshwater	No
Logperch, Conasauga (<i>Percina jenkinsi</i>)	Endangered	Fish Freshwater	Yes

Tennessee

(80) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Madtom, Pygmy (<i>Noturus stanauli</i>)	Endangered	Fish Freshwater	No
Madtom, Smoky (<i>Noturus baileyi</i>)	Endangered	Fish Freshwater	Yes
Madtom, Yellowfin (<i>Noturus flavipinnis</i>)	Threatened	Fish Freshwater	Yes
Shiner, Blue (<i>Cyprinella caerulea</i>)	Threatened	Fish Freshwater	No
Sturgeon, Pallid (<i>Scaphirhynchus albus</i>)	Endangered	Fish Freshwater	No
Marstonia, Royal (=Royal Snail) (<i>Pyrgulopsis ogmorhappe</i>)	Endangered	Gastropod Terrestrial	No
Riversnail, Anthony's (<i>Athearnia anthonyi</i>)	Endangered	Gastropod Freshwater	No
Lichen, Rock Gnome (<i>Gymnoderma lineare</i>)	Endangered	Lichen Terrestrial	No
Bat, Gray (<i>Myotis grisescens</i>)	Endangered	Mammal Subterranean, Terrestrial	No
Bat, Indiana (<i>Myotis sodalis</i>)	Endangered	Mammal Subterranean, Terrestrial	Yes
Squirrel, Carolina Northern Flying (<i>Glaucomys sabrinus coloratus</i>)	Endangered	Mammal Terrestrial	No
Grass, Tennessee Yellow-eyed (<i>Xyris tennesseensis</i>)	Endangered	Monocot Terrestrial	No
Pogonia, Small Whorled (<i>Isotria medeoloides</i>)	Threatened	Monocot Terrestrial	No

Texas

(86) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Salamander, Barton Springs (<i>Eurycea sosorum</i>)	Endangered	Amphibian Freshwater, Terrestrial	No
Salamander, San Marcos (<i>Eurycea nana</i>)	Threatened	Amphibian Freshwater, Terrestrial	Yes
Salamander, Texas Blind (<i>Typhlomolge rathbuni</i>)	Endangered	Amphibian Subterranean, Freshwater	No
Toad, Houston (<i>Bufo houstonensis</i>)	Endangered	Amphibian Terrestrial, Freshwater	Yes
Harvestman, Bee Creek Cave (<i>Texella reddelli</i>)	Endangered	Arachnid Terrestrial, Subterranean	No
Harvestman, Bone Cave (<i>Texella reyesi</i>)	Endangered	Arachnid Terrestrial, Subterranean	No
Harvestman, Robber Baron Cave (<i>Texella cokendolpheri</i>)	Endangered	Arachnid Subterranean, Terrestrial	Yes
Meshweaver, Braken Bat Cave (<i>Cicurina venii</i>)	Endangered	Arachnid Terrestrial, Subterranean	Yes

Texas

(86) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Pseudoscorpion, Tooth Cave (<i>Tartarocreagris texana</i>)	Endangered	Arachnid Terrestrial, Subterraneous	No
Spider, Government Canyon Cave (<i>Neoleptoneta microps</i>)	Endangered	Arachnid Subterraneous, Terrestrial	No
Spider, Madla's Cave (<i>Cicurina madla</i>)	Endangered	Arachnid Subterraneous, Terrestrial	Yes
Spider, Robber Baron Cave (<i>Cicurina baronia</i>)	Endangered	Arachnid Terrestrial, Subterraneous	Yes
Spider, Tooth Cave (<i>Neoleptoneta myopica</i>)	Endangered	Arachnid Terrestrial, Subterraneous	No
Spider, Vesper Cave (<i>Cicurina vespera</i>)	Endangered	Arachnid Subterraneous, Terrestrial	No
Crane, Whooping (<i>Grus americana</i>)	Endangered	Bird Terrestrial, Freshwater	Yes
Curlew, Eskimo (<i>Numenius borealis</i>)	Endangered	Bird Terrestrial	No
Falcon, Northern Aplomado (<i>Falco femoralis septentrionalis</i>)	Endangered	Bird Terrestrial	No
Flycatcher, Southwestern Willow (<i>Empidonax traillii extimus</i>)	Endangered	Bird Terrestrial	Yes
Owl, Mexican Spotted (<i>Strix occidentalis lucida</i>)	Threatened	Bird Terrestrial	Yes
Plover, Piping (<i>Charadrius melodus</i>)	Endangered	Bird Terrestrial	Yes
Prairie-chicken, Attwater's Greater (<i>Tympanuchus cupido attwateri</i>)	Endangered	Bird Terrestrial	No
Tern, Interior (population) Least (<i>Sterna antillarum</i>)	Endangered	Bird Terrestrial	No
Vireo, Black-capped (<i>Vireo atricapilla</i>)	Endangered	Bird Terrestrial	No
Warbler (=Wood), Golden-cheeked (<i>Dendroica chrysoparia</i>)	Endangered	Bird Terrestrial	No
Woodpecker, Red-cockaded (<i>Picoides borealis</i>)	Endangered	Bird Terrestrial	No
Amphipod, Peck's Cave (<i>Stygobromus</i> (=Stygonectes) <i>pecki</i>)	Endangered	Crustacean Subterraneous, Freshwater	No
Ambrosia, South Texas (<i>Ambrosia cheiranthifolia</i>)	Endangered	Dicot Terrestrial	No
Ayenia, Texas (<i>Ayenia limitaris</i>)	Endangered	Dicot Terrestrial	No
Bladderpod, White (<i>Lesquerella pallida</i>)	Endangered	Dicot Terrestrial	No

Texas

(86) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Bladderpod, Zapata (<i>Lesquerella thamnophila</i>)	Endangered	Dicot Terrestrial	Yes
Cactus, Black Lace (<i>Echinocereus reichenbachii</i> var. <i>albertii</i>)	Endangered	Dicot Terrestrial	No
Cactus, Bunched Cory (<i>Coryphantha ramillosa</i>)	Threatened	Dicot Terrestrial	No
Cactus, Chisos Mountain Hedgehog (<i>Echinocereus chisoensis</i> var. <i>chisoensis</i>)	Threatened	Dicot Terrestrial	No
Cactus, Lloyd's Mariposa (<i>Echinomastus mariposensis</i>)	Threatened	Dicot Terrestrial	No
Cactus, Nellie Cory (<i>Coryphantha minima</i>)	Endangered	Dicot Terrestrial	No
Cactus, Sneed Pincushion (<i>Coryphantha sneedii</i> var. <i>sneedii</i>)	Endangered	Dicot Terrestrial	No
Cactus, Star (<i>Astrophytum asterias</i>)	Endangered	Dicot Terrestrial	No
Cactus, Tobusch Fishhook (<i>Ancistrocactus tobuschii</i>)	Endangered	Dicot Terrestrial	No
Cat's-eye, Terlingua Creek (<i>Cryptantha crassipes</i>)	Endangered	Dicot Terrestrial	No
Dawn-flower, Texas Prairie (=Texas Bitterweed) (<i>Hymenoxys texana</i>)	Endangered	Dicot Terrestrial	No
Dogweed, Ashy (<i>Thymophylla tephroleuca</i>)	Endangered	Dicot Terrestrial	No
Frankenia, Johnston's (<i>Frankenia johnstonii</i>)	Endangered	Dicot Terrestrial	No
Fruit, Earth (=geocarpon) (<i>Geocarpon minimum</i>)	Threatened	Dicot Terrestrial	No
Manioc, Walker's (<i>Manihot walkerae</i>)	Endangered	Dicot Terrestrial	No
Oak, Hinckley (<i>Quercus hinckleyi</i>)	Threatened	Dicot Terrestrial	No
Phlox, Texas Trailing (<i>Phlox nivalis</i> ssp. <i>texensis</i>)	Endangered	Dicot Terrestrial	No
Pitaya, Davis' Green (<i>Echinocereus viridiflorus</i> var. <i>davisii</i>)	Endangered	Dicot Terrestrial	No
Poppy-mallow, Texas (<i>Callirhoe scabriuscula</i>)	Endangered	Dicot Terrestrial	No
Rush-pea, Slender (<i>Hoffmannseggia tenella</i>)	Endangered	Dicot Terrestrial	No
Sand-verbena, Large-fruited (<i>Abronia macrocarpa</i>)	Endangered	Dicot Terrestrial	No

Texas

(86) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Snowbells, Texas (<i>Styrax texanus</i>)	Endangered	Dicot Terrestrial	No
Sunflower, Pecos (<i>Helianthus paradoxus</i>)	Threatened	Dicot Terrestrial, Freshwater	No
Wild-buckwheat, Gypsum (<i>Eriogonum gypsophilum</i>)	Threatened	Dicot Terrestrial	Yes
Darter, Fountain (<i>Etheostoma fonticola</i>)	Endangered	Fish Freshwater	Yes
Gambusia, Big Bend (<i>Gambusia gaigei</i>)	Endangered	Fish Freshwater	No
Gambusia, Clear Creek (<i>Gambusia heterochir</i>)	Endangered	Fish Freshwater	No
Gambusia, Pecos (<i>Gambusia nobilis</i>)	Endangered	Fish Freshwater	No
Gambusia, San Marcos (<i>Gambusia georgei</i>)	Endangered	Fish Freshwater	Yes
Minnow, Devils River (<i>Dionda diaboli</i>)	Threatened	Fish Freshwater	No
Pupfish, Comanche Springs (<i>Cyprinodon elegans</i>)	Endangered	Fish Freshwater	No
Pupfish, Leon Springs (<i>Cyprinodon bovinus</i>)	Endangered	Fish Freshwater	Yes
Shiner, Arkansas River (<i>Notropis girardi</i>)	Threatened	Fish Freshwater	Yes
Snail, Pecos Assiminea (<i>Assiminea pecos</i>)	Endangered	Gastropod Freshwater	Yes
Beetle, American Burying (<i>Nicrophorus americanus</i>)	Endangered	Insect Terrestrial	No
Beetle, Coffin Cave Mold (<i>Batrisodes texanus</i>)	Endangered	Insect Subterraneous	No
Beetle, Comal Springs Dryopid (<i>Stygoparnus comalensis</i>)	Endangered	Insect Subterraneous, Freshwater	No
Beetle, Comal Springs Riffle (<i>Heterelmis comalensis</i>)	Endangered	Insect Subterraneous, Freshwater	No
Beetle, Helotes Mold (<i>Batrisodes ventyivi</i>)	Endangered	Insect Subterraneous	Yes
Beetle, Kretschmarr Cave Mold (<i>Texamaurops reddelli</i>)	Endangered	Insect Subterraneous	No
Beetle, Tooth Cave Ground (<i>Rhadine persephone</i>)	Endangered	Insect Subterraneous	No
Rhadine exilis (ncn) (<i>Rhadine exilis</i>)	Endangered	Insect Terrestrial, Subterraneous	Yes

Texas

(86) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Rhadine infernalis (ncn)	Endangered	Insect	Yes
(<i>Rhadine infernalis</i>)		Terrestrial, Subterraneous	
Bat, Mexican Long-nosed	Endangered	Mammal	No
(<i>Leptonycteris nivalis</i>)		Subterraneous, Terrestrial	
Bear, Louisiana Black	Threatened	Mammal	No
(<i>Ursus americanus luteolus</i>)		Terrestrial	
Jaguarundi, Gulf Coast	Endangered	Mammal	No
(<i>Herpailurus (=Felis) yagouaroundi cacomitli</i>)		Terrestrial	
Jaguarundi, Sinaloan	Endangered	Mammal	No
(<i>Herpailurus (=Felis) yagouaroundi tolteca</i>)		Terrestrial	
Ocelot	Endangered	Mammal	No
(<i>Leopardus (=Felis) pardalis</i>)		Terrestrial	
Ladies'-tresses, Navasota	Endangered	Monocot	No
(<i>Spiranthes parksii</i>)		Terrestrial	
Pondweed, Little Aguja Creek	Endangered	Monocot	No
(<i>Potamogeton clystocarpus</i>)		Freshwater	
Wild-rice, Texas	Endangered	Monocot	Yes
(<i>Zizania texana</i>)		Freshwater	
Sea turtle, green	Endangered	Reptile	No
(<i>Chelonia mydas</i>)		Saltwater	
Sea turtle, hawksbill	Endangered	Reptile	Yes
(<i>Eretmochelys imbricata</i>)		Saltwater	
Sea turtle, Kemp's ridley	Endangered	Reptile	No
(<i>Lepidochelys kempii</i>)		Saltwater	
Sea turtle, leatherback	Endangered	Reptile	Yes
(<i>Dermochelys coriacea</i>)		Saltwater	
Sea turtle, loggerhead	Threatened	Reptile	No
(<i>Caretta caretta</i>)		Saltwater	
Snake, Concho Water	Threatened	Reptile	Yes
(<i>Nerodia paucimaculata</i>)		Freshwater, Terrestrial	

Utah

(34) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Flycatcher, Southwestern Willow	Endangered	Bird	Yes
(<i>Empidonax traillii extimus</i>)		Terrestrial	
Owl, Mexican Spotted	Threatened	Bird	Yes
(<i>Strix occidentalis lucida</i>)		Terrestrial	
Bear-poppy, Dwarf	Endangered	Dicot	No
(<i>Arctomecon humilis</i>)		Terrestrial	
Bladderpod, Kodachrome	Endangered	Dicot	No
(<i>Lesquerella tumulosa</i>)		Terrestrial	
Cactus, Siler Pincushion	Threatened	Dicot	No
(<i>Pediocactus (=Echinocactus, =Utahia) sileri</i>)		Terrestrial	
Cactus, Uinta Basin Hookless	Threatened	Dicot	No
(<i>Sclerocactus glaucus</i>)		Terrestrial	

Utah

(34) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Cactus, Winkler (<i>Pediocactus winkleri</i>)	Threatened	Dicot Terrestrial	No
Cactus, Wright Fishhook (<i>Sclerocactus wrightiae</i>)	Endangered	Dicot Terrestrial	No
Cycladenia, Jones (<i>Cycladenia jonesii</i> (=humilis))	Threatened	Dicot Terrestrial	No
Daisy, Maguire (<i>Erigeron maguirei</i>)	Threatened	Dicot Freshwater	No
Milk-vetch, Deseret (<i>Astragalus desereticus</i>)	Threatened	Dicot Terrestrial	No
Milk-vetch, Heliotrope (<i>Astragalus montii</i>)	Threatened	Dicot Terrestrial	Yes
Milk-vetch, Holmgren (<i>Astragalus holmgreniorum</i>)	Endangered	Dicot Terrestrial	No
Milk-vetch, Shivwits (<i>Astragalus ampullarioides</i>)	Endangered	Dicot Terrestrial	No
Milkweed, Welsh's (<i>Asclepias welshii</i>)	Threatened	Dicot Terrestrial	Yes
Phacelia, Clay (<i>Phacelia argillacea</i>)	Endangered	Dicot Terrestrial	No
Primrose, Maguire (<i>Primula maguirei</i>)	Threatened	Dicot Terrestrial	No
Reed-mustard, Barneby (<i>Schoenocrambe barnebyi</i>)	Endangered	Dicot Terrestrial	No
Reed-mustard, Shrubby (<i>Schoenocrambe suffrutescens</i>)	Endangered	Dicot Terrestrial	No
Ridge-cress (=Pepper-cress), Barneby (<i>Lepidium barnebyanum</i>)	Endangered	Dicot Terrestrial	No
Townsendia, Last Chance (<i>Townsendia aprica</i>)	Threatened	Dicot Terrestrial	No
Chub, Bonytail (<i>Gila elegans</i>)	Endangered	Fish Freshwater	Yes
Chub, Humpback (<i>Gila cypha</i>)	Endangered	Fish Freshwater	Yes
Chub, Virgin River (<i>Gila seminuda</i> (=robusta))	Endangered	Fish Freshwater	Yes
Squawfish, Colorado (<i>Ptychocheilus lucius</i>)	Endangered	Fish Freshwater	Yes
Sucker, June (<i>Chasmistes liorus</i>)	Endangered	Fish Freshwater	Yes
Sucker, Razorback (<i>Xyrauchen texanus</i>)	Endangered	Fish Freshwater	Yes

Utah (34) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Trout, Lahontan Cutthroat (<i>Oncorhynchus clarki henshawi</i>)	Threatened	Fish Freshwater	No
Woundfin (<i>Plagopterus argentissimus</i>)	Endangered	Fish Freshwater	Yes
Ferret, Black-footed (<i>Mustela nigripes</i>)	Endangered	Mammal Terrestrial	No
Prairie Dog, Utah (<i>Cynomys parvidens</i>)	Threatened	Mammal Terrestrial, Subterraneous	No
Ladies'-tresses, Ute (<i>Spiranthes diluvialis</i>)	Threatened	Monocot Terrestrial	No
Sedge, Navajo (<i>Carex specuicola</i>)	Threatened	Monocot Terrestrial	Yes
Tortoise, Desert (<i>Gopherus agassizii</i>)	Threatened	Reptile Terrestrial	Yes

Vermont (4) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Mussel, Dwarf Wedge (<i>Alasmidonta heterodon</i>)	Endangered	Bivalve Freshwater	No
Milk-vetch, Jesup's (<i>Astragalus robbinsii</i> var. <i>jesupi</i>)	Endangered	Dicot Terrestrial	No
Bat, Indiana (<i>Myotis sodalis</i>)	Endangered	Mammal Subterraneous, Terrestrial	Yes
Bulrush, Northeastern (=Barbed Bristle) (<i>Scirpus ancistrochaetus</i>)	Endangered	Monocot Terrestrial, Freshwater	No

Virginia (57) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Salamander, Shenandoah (<i>Plethodon shenandoah</i>)	Endangered	Amphibian Freshwater, Terrestrial	No
Plover, Piping (<i>Charadrius melodus</i>)	Endangered	Bird Terrestrial	Yes
Woodpecker, Red-cockaded (<i>Picoides borealis</i>)	Endangered	Bird Terrestrial	No
Fanshell (<i>Cyprogenia stegaria</i>)	Endangered	Bivalve Freshwater	No
Mucket, Pink (Pearlymussel) (<i>Lampsilis abrupta</i>)	Endangered	Bivalve Freshwater	No
Mussel, Cumberland Combshell (<i>Epioblasma brevidens</i>)	Endangered	Bivalve Freshwater	Yes
Mussel, Cumberland Elktoe (<i>Alasmidonta atropurpurea</i>)	Endangered	Bivalve Freshwater	Yes
Mussel, Dwarf Wedge (<i>Alasmidonta heterodon</i>)	Endangered	Bivalve Freshwater	No
Mussel, Fine-rayed Pigtoe (<i>Fusconaia cuneolus</i>)	Endangered	Bivalve Freshwater	No

Virginia

(57) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Mussel, Oyster	Endangered	Bivalve	Yes
(<i>Epioblasma capsaeformis</i>)		Freshwater	
Mussel, Rough Pigtoe	Endangered	Bivalve	No
(<i>Pleurobema plenum</i>)		Freshwater	
Mussel, Shiny Pigtoe	Endangered	Bivalve	No
(<i>Fusconaia cor</i>)		Freshwater	
Pearlymussel, Appalachian Monkeyface	Endangered	Bivalve	No
(<i>Quadrula sparsa</i>)		Freshwater	
Pearlymussel, Birdwing	Endangered	Bivalve	No
(<i>Conradilla caelata</i>)		Freshwater	
Pearlymussel, Cracking	Endangered	Bivalve	No
(<i>Hemistena lata</i>)		Freshwater	
Pearlymussel, Cumberland Bean	Endangered	Bivalve	No
(<i>Villosa trabalis</i>)		Freshwater	
Pearlymussel, Cumberland Monkeyface	Endangered	Bivalve	No
(<i>Quadrula intermedia</i>)		Freshwater	
Pearlymussel, Dromedary	Endangered	Bivalve	No
(<i>Dromus dromas</i>)		Freshwater	
Pearlymussel, Green-blossom	Endangered	Bivalve	No
(<i>Epioblasma torulosa gubernaculum</i>)		Freshwater	
Pearlymussel, Little-wing	Endangered	Bivalve	No
(<i>Pegias fabula</i>)		Freshwater	
Purple Bean	Endangered	Bivalve	Yes
(<i>Villosa perpurpurea</i>)		Freshwater	
Rabbitsfoot, Rough	Endangered	Bivalve	Yes
(<i>Quadrula cylindrica strigillata</i>)		Freshwater	
Riffleshell, Tan	Endangered	Bivalve	No
(<i>Epioblasma florentina walkeri</i> (=E. walkeri))		Freshwater	
Spinymussel, James River	Endangered	Bivalve	No
(<i>Pleurobema collina</i>)		Freshwater	
Isopod, Lee County Cave	Endangered	Crustacean	No
(<i>Lirceus usdagalun</i>)		Freshwater	
Isopod, Madison Cave	Threatened	Crustacean	No
(<i>Antrolana lira</i>)		Freshwater	
Amaranth, Seabeach	Threatened	Dicot	No
(<i>Amaranthus pumilus</i>)		Coastal (neritic)	
Bittercress, Small-anthered	Endangered	Dicot	No
(<i>Cardamine micranthera</i>)		Terrestrial	
Chaffseed, American	Endangered	Dicot	No
(<i>Schwalbea americana</i>)		Terrestrial	
Coneflower, Smooth	Endangered	Dicot	No
(<i>Echinacea laevigata</i>)		Terrestrial	

Virginia

(57) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Harperella	Endangered	Dicot	No
(<i>Ptilimnium nodosum</i>)		Freshwater	
Joint-vetch, Sensitive	Threatened	Dicot	No
(<i>Aeschynomene virginica</i>)		Terrestrial, Brackish	
Rock-cress, Shale Barren	Endangered	Dicot	No
(<i>Arabis serotina</i>)		Terrestrial	
Sneezeweed, Virginia	Threatened	Dicot	No
(<i>Helenium virginicum</i>)		Vernal pool	
Spiraea, Virginia	Threatened	Dicot	No
(<i>Spiraea virginiana</i>)		Terrestrial	
Sumac, Michaux's	Endangered	Dicot	No
(<i>Rhus michauxii</i>)		Terrestrial	
Sunflower, Schweinitz's	Endangered	Dicot	No
(<i>Helianthus schweinitzii</i>)		Terrestrial	
Chub, Slender	Threatened	Fish	Yes
(<i>Erimystax cahni</i>)		Freshwater	
Chub, Spotfin	Threatened	Fish	Yes
(<i>Erimonax monachus</i>)		Freshwater	
Dace, Blackside	Threatened	Fish	No
(<i>Phoxinus cumberlandensis</i>)		Freshwater	
Darter, Duskytail	Endangered	Fish	No
(<i>Etheostoma percnurum</i>)		Freshwater	
Logperch, Roanoke	Endangered	Fish	No
(<i>Percina rex</i>)		Freshwater	
Madtom, Yellowfin	Threatened	Fish	Yes
(<i>Noturus flavipinnis</i>)		Freshwater	
Sturgeon, Shortnose	Endangered	Fish	No
(<i>Acipenser brevirostrum</i>)		Saltwater, Freshwater	
Snail, Virginia Fringed Mountain	Endangered	Gastropod	No
(<i>Polygyriscus virginianus</i>)		Terrestrial	
Beetle, Northeastern Beach Tiger	Threatened	Insect	No
(<i>Cicindela dorsalis dorsalis</i>)		Terrestrial	
Butterfly, Mitchell's Satyr	Endangered	Insect	No
(<i>Neonympha mitchellii mitchellii</i>)		Terrestrial	
Butterfly, Saint Francis' Satyr	Endangered	Insect	No
(<i>Neonympha mitchellii francisci</i>)		Terrestrial	
Bat, Gray	Endangered	Mammal	No
(<i>Myotis grisescens</i>)		Subterranean, Terrestrial	
Bat, Indiana	Endangered	Mammal	Yes
(<i>Myotis sodalis</i>)		Subterranean, Terrestrial	
Bat, Virginia Big-eared	Endangered	Mammal	Yes
(<i>Corynorhinus (=Plecotus) townsendii virginianus</i>)		Terrestrial, Subterranean	

Virginia (57) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Squirrel, Delmarva Peninsula Fox (<i>Sciurus niger cinereus</i>)	Endangered	Mammal Terrestrial	No
Bulrush, Northeastern (=Barbed Bristle) (<i>Scirpus ancistrochaetus</i>)	Endangered	Monocot Terrestrial, Freshwater	No
Orchid, Eastern Prairie Fringed (<i>Platanthera leucophaea</i>)	Threatened	Monocot Terrestrial	No
Pink, Swamp (<i>Helonias bullata</i>)	Threatened	Monocot Terrestrial, Freshwater	No
Pogonia, Small Whorled (<i>Isotria medeoloides</i>)	Threatened	Monocot Terrestrial	No
Sea turtle, loggerhead (<i>Caretta caretta</i>)	Threatened	Reptile Saltwater	No

Washington (33) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Murrelet, Marbled (<i>Brachyramphus marmoratus marmoratus</i>)	Threatened	Bird Freshwater, Terrestrial, Saltwater	Yes
Owl, Northern Spotted (<i>Strix occidentalis caurina</i>)	Threatened	Bird Terrestrial	Yes
Plover, Western Snowy (<i>Charadrius alexandrinus nivosus</i>)	Threatened	Bird Terrestrial	Yes
Catchfly, Spalding's (<i>Silene spaldingii</i>)	Threatened	Dicot Terrestrial	No
Checker-mallow, Nelson's (<i>Sidalcea nelsoniana</i>)	Threatened	Dicot Terrestrial	No
Checker-mallow, Wenatchee Mountains (<i>Sidalcea oregana</i> var. <i>calva</i>)	Endangered	Dicot Terrestrial	Yes
Howellia, Water (<i>Howellia aquatilis</i>)	Threatened	Dicot Freshwater	No
Lupine, Kincaid's (<i>Lupinus sulphureus</i> (=oreganus) ssp. <i>kincaidii</i> (=var. <i>kincaidii</i>))	Threatened	Dicot Terrestrial	No
Paintbrush, Golden (<i>Castilleja levisecta</i>)	Threatened	Dicot Terrestrial	No
Stickseed, Showy (<i>Hackelia venusta</i>)	Endangered	Dicot Terrestrial	No
Salmon, Chinook (Lower Columbia River) (<i>Oncorhynchus</i> (=Salmo) <i>tshawytscha</i>)	Threatened	Fish Freshwater, Brackish, Saltwater	Yes
Salmon, Chinook (Puget Sound) (<i>Oncorhynchus</i> (=Salmo) <i>tshawytscha</i>)	Threatened	Fish Freshwater, Brackish, Saltwater	Yes
Salmon, Chinook (Snake River Fall Run) (<i>Oncorhynchus</i> (=Salmo) <i>tshawytscha</i>)	Threatened	Fish Freshwater, Saltwater, Brackish	No
Salmon, Chinook (Snake River spring/summer) (<i>Oncorhynchus</i> (=Salmo) <i>tshawytscha</i>)	Threatened	Fish Brackish, Saltwater, Freshwater	Yes
Salmon, Chinook (Upper Columbia River Spring) (<i>Oncorhynchus</i> (=Salmo) <i>tshawytscha</i>)	Endangered	Fish Freshwater, Saltwater, Brackish	Yes

Washington (33) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Salmon, Chinook (Upper Willamette River)	Threatened	Fish	Yes
(<i>Oncorhynchus</i> (=Salmo) <i>tshawytscha</i>)		Saltwater, Brackish, Freshwater	
Salmon, Chum (Columbia River population)	Threatened	Fish	Yes
(<i>Oncorhynchus</i> (=Salmo) <i>keta</i>)		Brackish, Freshwater, Saltwater	
Salmon, Chum (Hood Canal Summer population)	Threatened	Fish	Yes
(<i>Oncorhynchus</i> (=Salmo) <i>keta</i>)		Freshwater, Brackish, Saltwater	
Salmon, Sockeye (Ozette Lake population)	Threatened	Fish	Yes
(<i>Oncorhynchus</i> (=Salmo) <i>nerka</i>)		Saltwater, Freshwater, Brackish	
Salmon, Sockeye (Snake River population)	Endangered	Fish	No
(<i>Oncorhynchus</i> (=Salmo) <i>nerka</i>)		Brackish, Saltwater, Freshwater	
Steelhead, (Lower Columbia River population)	Threatened	Fish	Yes
(<i>Oncorhynchus</i> (=Salmo) <i>mykiss</i>)		Brackish, Freshwater, Saltwater	
Steelhead, (Middle Columbia River population)	Threatened	Fish	Yes
(<i>Oncorhynchus</i> (=Salmo) <i>mykiss</i>)		Freshwater, Saltwater, Brackish	
Steelhead, (Snake River Basin population)	Threatened	Fish	Yes
(<i>Oncorhynchus</i> (=Salmo) <i>mykiss</i>)		Freshwater, Brackish, Saltwater	
Steelhead, (Upper Columbia River population)	Threatened	Fish	Yes
(<i>Oncorhynchus</i> (=Salmo) <i>mykiss</i>)		Brackish, Saltwater, Freshwater	
Steelhead, (Upper Willamette River population)	Threatened	Fish	Yes
(<i>Oncorhynchus</i> (=Salmo) <i>mykiss</i>)		Brackish, Saltwater, Freshwater	
Steelhead, Puget Sound	Threatened	Fish	No
(<i>Oncorhynchus mykiss</i>)			
Trout, Bull	Threatened	Fish	No
(<i>Salvelinus confluentus</i>)		Freshwater	
Trout, Bull (Columbia River population)	Threatened	Fish	Yes
(<i>Salvelinus confluentus</i>)		Freshwater	
Trout, Bull (Klamath River population)	Threatened	Fish	Yes
(<i>Salvelinus confluentus</i>)		Freshwater	
Butterfly, Oregon Silverspot	Threatened	Insect	Yes
(<i>Speyeria zerene hippolyta</i>)		Terrestrial	
Bear, Grizzly	Threatened	Mammal	No
(<i>Ursus arctos horribilis</i>)		Terrestrial	
Deer, Columbian White-tailed	Endangered	Mammal	No
(<i>Odocoileus virginianus leucurus</i>)		Terrestrial	
Rabbit, Pygmy	Endangered	Mammal	No
(<i>Brachylagus idahoensis</i>)		Terrestrial	

West Virginia (15) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Salamander, Cheat Mountain	Threatened	Amphibian	No
(<i>Plethodon nettingi</i>)		Freshwater, Terrestrial	
Fanshell	Endangered	Bivalve	No
(<i>Cyprogenia stegaria</i>)		Freshwater	
Mucket, Pink (Pearlymussel)	Endangered	Bivalve	No
(<i>Lampsilis abrupta</i>)		Freshwater	

West Virginia

(15) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Mussel, Clubshell (<i>Pleurobema clava</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Tubercled-blossom (<i>Epioblasma torulosa torulosa</i>)	Endangered	Bivalve Freshwater	No
Spiny mussel, James River (<i>Pleurobema collina</i>)	Endangered	Bivalve Freshwater	No
Clover, Running Buffalo (<i>Trifolium stoloniferum</i>)	Endangered	Dicot Terrestrial	No
Harperella (<i>Ptilimnium nodosum</i>)	Endangered	Dicot Freshwater	No
Rock-cress, Shale Barren (<i>Arabis serotina</i>)	Endangered	Dicot Terrestrial	No
Spiraea, Virginia (<i>Spiraea virginiana</i>)	Threatened	Dicot Terrestrial	No
Snail, Flat-spined Three-toothed (<i>Triodopsis platysayoides</i>)	Threatened	Gastropod Terrestrial	No
Bat, Gray (<i>Myotis grisescens</i>)	Endangered	Mammal Subterranean, Terrestrial	No
Bat, Indiana (<i>Myotis sodalis</i>)	Endangered	Mammal Subterranean, Terrestrial	Yes
Bat, Virginia Big-eared (<i>Corynorhinus (=Plecotus) townsendii virginianus</i>)	Endangered	Mammal Terrestrial, Subterranean	Yes
Bulrush, Northeastern (=Barbed Bristle) (<i>Scirpus ancistrochaetus</i>)	Endangered	Monocot Terrestrial, Freshwater	No

Wisconsin

(14) species:

		<u>Taxa</u>	<u>Critical Habitat</u>
Crane, Whooping (<i>Grus americana</i>)	Endangered	Bird Terrestrial, Freshwater	Yes
Plover, Piping (<i>Charadrius melodus</i>)	Endangered	Bird Terrestrial	Yes
Warbler (=Wood), Kirtland's (<i>Dendroica kirtlandii</i>)	Endangered	Bird Terrestrial	No
Mussel, Winged Mapleleaf (<i>Quadrula fragosa</i>)	Endangered	Bivalve Freshwater	No
Pearlymussel, Higgins' Eye (<i>Lampsilis higginsii</i>)	Endangered	Bivalve Freshwater	No
Clover, Prairie Bush (<i>Lespedeza leptostachya</i>)	Threatened	Dicot Terrestrial	No
Locoweed, Fassett's (<i>Oxytropis campestris var. chartacea</i>)	Threatened	Dicot Terrestrial	No
Monkshood, Northern Wild (<i>Aconitum noveboracense</i>)	Threatened	Dicot Terrestrial	No
Thistle, Pitcher's (<i>Cirsium pitcheri</i>)	Threatened	Dicot Terrestrial	No

Wisconsin (14) species:

Butterfly, Karner Blue	Endangered	<u>Taxa</u> Insect	<u>Critical Habitat</u> No
(<i>Lycaeides melissa samuelis</i>)		Terrestrial	
Dragonfly, Hine's Emerald	Endangered	Insect	Yes
(<i>Somatochlora hineana</i>)		Freshwater, Terrestrial	
Lynx, Canada	Threatened	Mammal	No
(<i>Lynx canadensis</i>)		Terrestrial	
Iris, Dwarf Lake	Threatened	Monocot	No
(<i>Iris lacustris</i>)		Terrestrial	
Orchid, Eastern Prairie Fringed	Threatened	Monocot	No
(<i>Platanthera leucophaea</i>)		Terrestrial	

Wyoming (1) species:

Ferret, Black-footed	Endangered	<u>Taxa</u> Mammal	<u>Critical Habitat</u> No
(<i>Mustela nigripes</i>)		Terrestrial	

No species were selected for exclusion.

Dispersed species included in report.